ZooKeys 80: 1–126 (2011)
doi: 10.3897/zookeys.80.907
www.zookeys.org

MONOGRAPH

A peer-reviewed open-access journal
ZooKeys
Launched to accelerate biodiversity research

Revision of the Malagasy genus *Trichoteleia* Kieffer (Hymenoptera, Platygastroidea, Platygastridae)

Elijah J. Talamas[1,†], Lubomír Masner[2,‡], Norman F. Johnson[3,§]

1 *Department of Entomology, The Ohio State University, 1315 Kinnear Road, Columbus, Ohio 43212, U.S.A.* **2** *Agriculture and Agri-Food Canada, K.W. Neatby Building, Ottawa, Ontario K1A 0C6, Canada* **3** *Department of Evolution, Ecology, and Organismal Biology, The Ohio State University, 1315 Kinnear Road, Columbus, Ohio 43212, U.S.A.*

† *urn:lsid:zoobank.org:author:19124B60-4D11-46AF-ADBF-E48A9988B102*
‡ *urn:lsid:zoobank.org:author:F1505310-F606-4F6C-A1DF-74B9A0055B2E*
§ *urn:lsid:zoobank.org:pub:1CD731A3-B3BA-42DC-A866-ADC00C3E9D70*

Corresponding author: *Elijah J. Talamas* (talamas.1@osu.edu)

Academic editor: *Michael Sharkey* | Received 30 October 2010 | Accepted 3 January 2011 | Published 16 February 2011

urn:lsid:zoobank.org:pub:1CD731A3-B3BA-42DC-A866-ADC00C3E9D70

Citation: Talamas EJ, Masner L, Johnson NF (2011) Revision of the Malagasy genus *Trichoteleia* Kieffer (Hymenoptera, Platygastroidea, Platygastridae). ZooKeys 80: 1–126. doi: 10.3897/zookeys.80.907

Abstract

The species of the genus *Trichoteleia* Kieffer (Hymenoptera: Platygastridae) are revised: 42 species are recognized, of which two were previously named and are redescribed: *T. afo* Talamas, **sp. n.**, *T. albidipes* Kieffer, *T. bicolor* Talamas, **sp. n.**; *T. bidentata* Talamas **sp. n.**; *T. carinata* Talamas, **sp. n.**; *T. cincta* Talamas & Masner, **sp. n.**; *T. delilah* Talamas, **sp. n.**; *T. eburata* Talamas, **sp. n.**; *T. echinata* Talamas, **sp. n.**; *T. fisheri* Talamas & Masner, **sp. n.**; *T. funesta* Talamas, **sp. n.**; *T. halterata* Talamas & Masner, **sp. n.**; *T. hemlyae* Talamas & Masner, **sp. n.**; *T. irwini* Talamas & Masner, **sp. n.**; *T. janus* Talamas, **sp. n.**; *T. jiro* Talamas, **sp. n.**; T. *ketrona* Talamas, **sp. n.**; *T. levii* Talamas & Johnson, **sp. n.**; *T. longiventris* Talamas & Masner, **sp. n.**; *T. minima* Talamas, **sp. n.**; *T. nify* Talamas & Masner, **sp. n.**; *T. oculea* Talamas, **sp. n.**; *T. orona* Talamas & Masner, **sp. n.**; *T. parvipennis* Talamas & Masner, **sp. n.**; *T. pauliani* (Risbec); *T. picturata* Talamas, **sp. n.**; *T. prima* Talamas, **sp. n.**; *T. prolixa* Talamas, **sp. n.**; *T. quazii* Talamas, **sp. n.**; *T. ravaka* Talamas, **sp. n.**; *T. rugifrons* Talamas & Masner, **sp. n.**; *T. solocis* Talamas, **sp. n.**; *T. sphaerica* Talamas, **sp. n.**; *T. subtilis* Talamas & Masner, **sp. n.**; *T. tahotra* Talamas & Masner, **sp. n.**; *T. takariva* Talamas, **sp. n.**; *T. tezitra* Talamas, **sp. n.**; *T. tigris* Talamas, **sp. n.**; *T. tonsa* Talamas, **sp. n.**; *T. warreni* Talamas & Masner, **sp. n.**; *T. xantrox* Talamas, **sp. n.**; *T. zuparkoi* Talamas & Masner, **sp. n.** A neotype is designated for *Trichoteleia albidipes* and a lectotype is designated for *T. pauliani*.

Copyright *E.J. Talamas* et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Keywords
Platygastridae, Scelionidaem, Trichoteleia, key, revision, monograph, database, endemicity, Madagascar

Introduction

The richness and endemicity of Madagascar's fauna and flora is well documented in a wide variety of organisms. The genus *Trichoteleia* is an example that fits this pattern with 42 species known only from Madagascar and the surrounding islands. More than half of the species treated in this revision are represented by five or fewer specimens, and many are known from singletons, suggesting that more species remain to be discovered. The extraordinary explosion of species presented in this paper highlights the importance of faunal exploration in Madagascar and other regions with rapidly vanishing biodiversity.

The genus *Trichoteleia* was described by J. J. Kieffer (1910) to contain one species, *Trichoteleia albidipes* Kieffer, which was based on a single male specimen collected in Madagascar during an expedition of the German zoologist Alfred Voeltzkow. Alan Dodd described 6 species as *Trichoteleia* between 1914 and 1920, all of which were eventually transferred to *Calliscelio* Ashmead (Galloway 1976, Masner 1976), *Styloteleia* Kieffer (Dodd 1929, Masner 1976) and *Baryconus* Förster (Masner 1965). Masner (1976) transferred *Alloteleia pauliani* Risbec to *Trichoteleia*. At the time of that publication Masner was unable to locate the holotype of *T. albidipes* in Berlin, and all of the platygastroids described by Kieffer from the Voeltzkow expedition are now considered to be lost.

The goal of this paper is to reevaluate the generic concept of *Trichoteleia*, to provide characters by which it may be unambiguously identified, and to document its species. This work is conducted as part of the Platygastroidea Planetary Biodiversity Inventory and represents a step toward revision of the Scelionini *sensu lato* and resolution of the relationships between its constituent genera. The contributions of the authors are as follows: E.J. Talamas: character definition, generic concept development, species concept development, imaging, key development, manuscript preparation; L. Masner: generic concept development, species concept development, manuscript preparation, key preparation; N.F. Johnson: character definition, species concept development, manuscript preparation, key development. The responsible authors of the new species are indicated by their names in the heading of each description.

Materials and methods

This work is based upon specimens deposited in the following collections, with abbreviations used in the text: CASC, California Academy of Sciences, San Francisco, CA[1]; CNCI, Canadian National Collection of Insects, Ottawa, Canada[2]; MNHN, Muséum

National d'Histoire Naturelle, Paris, France[3]; OSUC, C.A. Triplehorn Insect Collection, Columbus, OH[4]; UCDC, R. M. Bohart Museum of Entomology, Davis, CA[5]; USNM, National Museum of Natural History, Washington, DC[6].

Abbreviations and morphological terms used in text: A1, A2, ... A12: antennomere 1, 2, ... 12; claval formula: distribution of the large, multiporous basiconic sensilla on the underside of apical antennomeres of the female, with the segment interval specified followed by the number of sensilla per segment (Bin 1981); S1, S2, ... S6: metasomal sternite 1, 2, ... 6; T1, T2, ... T7: metasomal tergite 1, 2, ... 7. basal node on mandible: dorsal enlargement at base of mandible, usually with apically adjacent notch (bn; Figs 112, 142); sublateral tergal carina: longitudinal carina at the junction of dorsal and lateral faces of a metasomal tergite (stc; Fig. 84); pronotal setal patch: patch of setae along posterior pronotal sulcus (psp; Figs 14, 16); posterior vertex: area between the posterior ocelli and the occipital carina; transverse sulcus on T2: transverse sulcus along anterior margin of T2 (trs; Fig. 40); metapleural spine: posteriorly pointing process formed from the metapleural carina (mtsp; Fig. 29).

We divide the epomial carina into vertical and dorsal components. The former is not present as external ridge in *Trichoteleia* but we consider it to be homologous with the division line between the setaceous cervical pronotal area and the glabrous (anteriorly) lateral pronotal area.

Mikó et al. (2007) used the metapleural epicoxal carina to posteriorly delimit the metapleural triangle. This carina is not present in some species of *Trichoteleia*, but we use the term metapleural triangle nonetheless to refer to the same anteroventral area of the metapleuron.

The following morphological terms are illustrated and labeled to facilitate their use. Definitions and abbreviations follow Mikó et al. (2007).

Antero-admedian lines (aal; Figs 7, 10)
Axillular carina (axc: Figs 11, 12)
Central keel (ctk; Fig. 3)
Cervical pronotal area (cpa; Figs 15, 16)
Dorsal epomial carina (depc; Figs 13, 14)
Dorsal metapleural area (dmpa; Figs 30, 145)
Lateral pronotal area (lpa; Figs 15, 16)
Lateral propodeal area (lpar; Figs 25, 27)
Mesoscutal suprahumeral sulcus (shms; Figs 7, 9)
Metapleural triangle (mtp; Fig. 29)
Postacetabular sulcus (ats; Figs 15, 16)
Posterior pronotal sulcus (ppsu; Figs 11, 15)
Posterior propodeal projection (ppp; Fig. 25)

Morphological terminology otherwise follows Mason (1986), Masner (1980) and Mikó et al. (2007).

The locality data reported for primary types are not a literal transcription of the labels: some abbreviations are expanded; additional data from the collectors is also included. The holotypes should be unambiguously identifiable by means of the

unique identifier or the red holotype label. The numbers prefixed with "OSUC " and "CASENT " are unique identifiers for the individual specimens (note the blank space after the acronyms). Details on the data associated with these specimens may be accessed at the following link, purl.oclc.org/NET/hymenoptera/hol, and entering the identifier in the form.

The species descriptions are generated by a database application, vSysLab (purl.oclc.org/NET/hymenoptera/vSysLab), designed to facilitate the generation of taxon by character data matrices, to integrate these with the existing taxonomic and specimen-level database, and to export the data both as text and as input files for other applications. The output is in the format of "Character: Character state(s)." Images were produced using AutoMontage extended-focus software. The individual images are archived at the image database at The Ohio State University (purl.oclc.org/NET/hymenoptera/specimage) and with MorphBank (www.morphbank.net), the latter also contains collections of images organized by plate. All new species have been prospectively registered with Zoobank (Polaszek et al. 2005) and other taxonomic names have been retrospectively registered therein. All names are also registered in the Hymenoptera Name Server (hns.osu.edu). Life sciences identifiers, lsids, may be resolved at the URLs specified in the footnotes or at lsid.tdwg.org.

For the purpose of this revision, species are defined as taxa diagnosable by putative autapomorphies or a unique combination of fixed character states.

Taxonomy

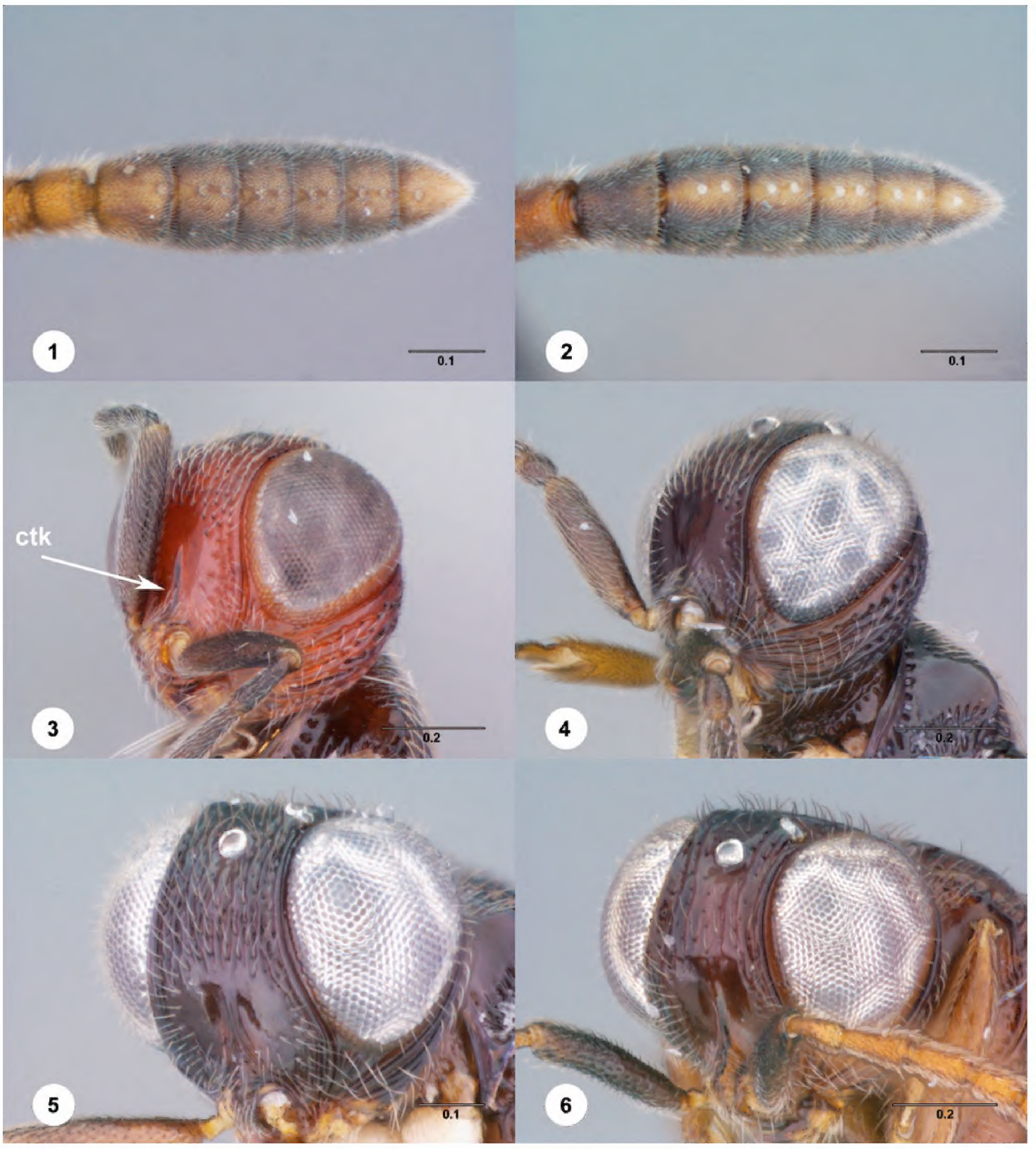
Trichoteleia Kieffer

urn:lsid:zoobank.org:act:443BC2B3-C498-4899-8291-07F0EA347FEE
urn:lsid:biosci.ohio-state.edu:osuc_concepts:573

Trichoteleia: Kieffer, 1910: 530. Original description. Type: *Trichoteleia albidipes* Kieffer, by monotypy. Kieffer, 1910: 64, 77. (description, list of species, keyed); Kieffer, 1913: 227. (description); Kieffer, 1926: 269, 402. (description, keyed); Muesebeck and Walkley, 1956: 405. (citation of type species); Masner, 1976: 41. (description); Johnson, 1992: 506. (catalog of world species).

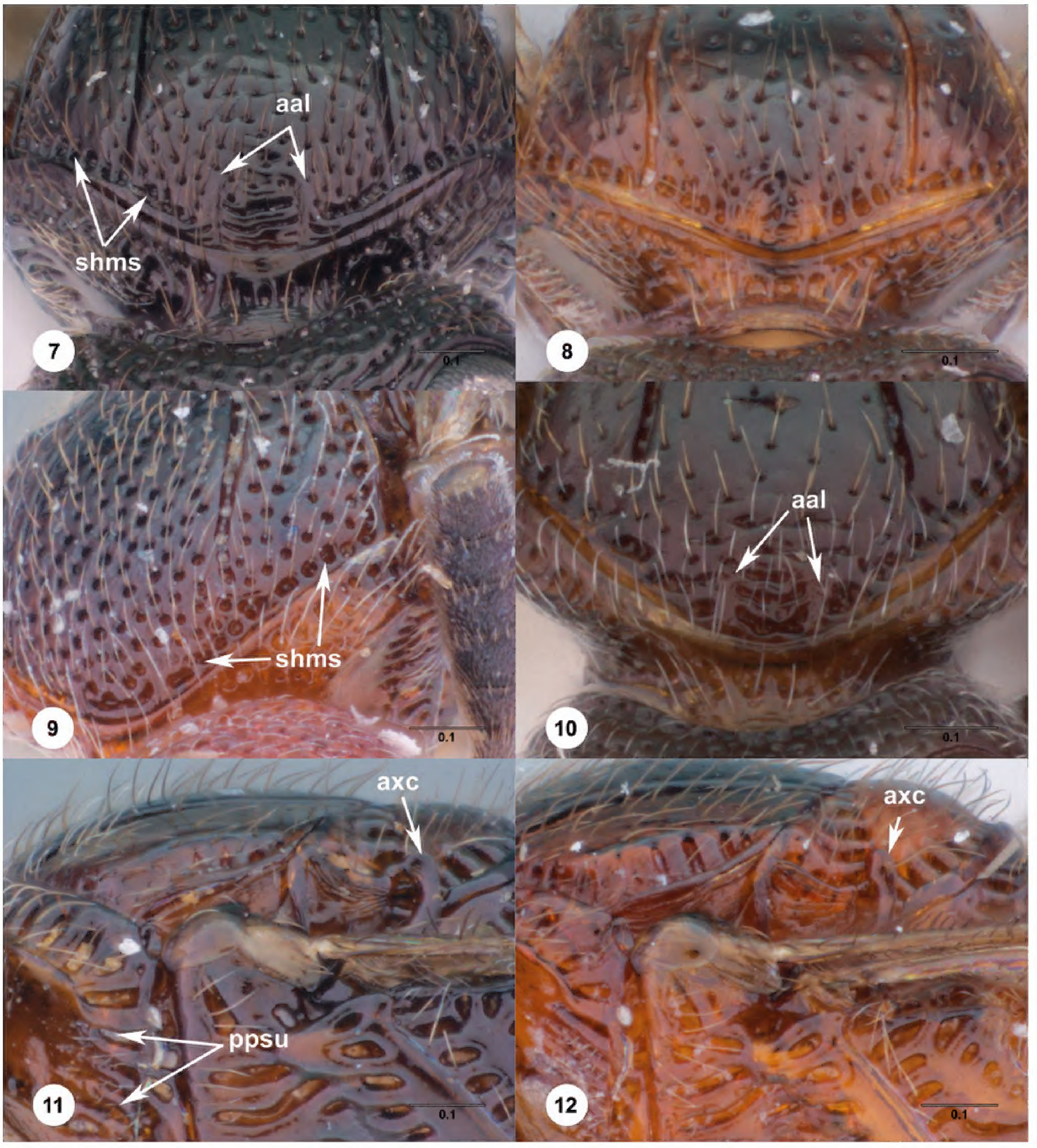
Description. Length 2.1–4.1 mm; body moderately to markedly elongate, robust.

Head in dorsal view transverse to subspherical; vertex smooth to coarsely sculptured; hyperoccipital carina absent; occipital carina usually well developed and continuous medially; lateral ocellus contiguous with inner orbit of compound eye or distinctly separated from it, OOL less than or equal to diameter of lateral ocellus; compound eye large, setose; frons shallowly concave to slightly convex, usually with central keel; interantennal process present, large; antennal foramen very large; submedian carina absent; orbital carina present or absent; lower frons, laterad of orbital carina, with fanlike striae; lower frons between orbital carina and interanten-



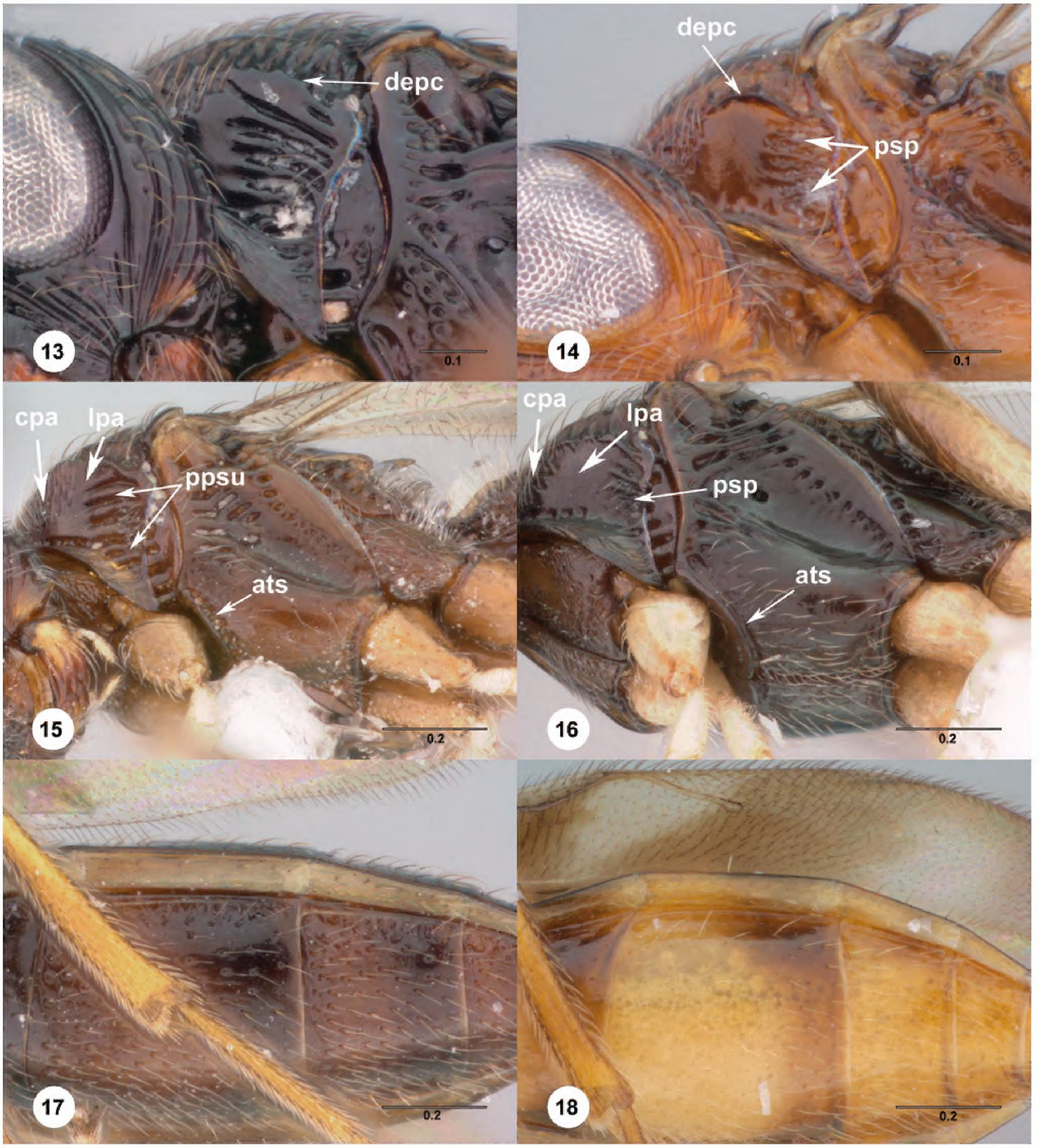
Figures 1–6.[68] **1** *Trichoteleia delilah* sp. n., Antennal clava, ventral view, female (CASENT 2135905) **2** *Trichoteleia orona* sp. n., Antennal clava, ventral view, female (CASENT 2043194) **3** *Trichoteleia hemlyae* sp. n., Head, anterolateral view, female (CASENT 2043942) **4** *Trichoteleia pauliani* sp. n., Head, anterolateral view, female (CASENT 2136193) **5** *Trichoteleia subtilis* sp. n., Head, anterolateral view, female (CASENT 2134158) **6** *Trichoteleia janus* sp. n., Head, anterolateral view, female (CASENT 2042242). Scale bars in millimeters.

nal process without striae; inner ocular orbits parallel or diverging ventrally; clypeus narrow, slightly convex; malar sulcus present; gena in dorsal view variably expanded posteriorly, sculpture variable; labrum hidden behind clypeus; mandible of moderate length, apex with two or three apical, acute, teeth, teeth arrayed transversely; maxillary palpus 4-segmented, all segments cylindrical; labial palpus 2-segmented;



Figures 7–12.[69] **7** *Trichoteleia takariva* sp. n., Antero-admedian line, anterodorsal view, male holotype (CASENT 2043217) **8** *Trichoteleia janus* sp. n., Antero-admedian line, anterodorsal view, male (CASENT 2043786) **9** *Trichoteleia hemlyae* sp. n., Notaulus, anterodorsal view, female (OSUC 181027) **10** *Trichoteleia minima* sp. n., Notaulus, anterodorsal view, female holotype (CASENT 2043543) **11** *Trichoteleia prima* sp. n., Scutellar-axillar complex, lateral view, female (CASENT 2134201) **12** *Trichoteleia levii* sp. n., Scutellar-axillar complex, lateral view, female (CASENT 2043789). Scale bars in millimeters.

antenna 12-merous in both sexes; radicle inserted into ventral apex of scape, strongly curved; scape more or less cylindrical, ventral surface flattened; A3 in females longer than A2; basiconic sensilla on female antenna arranged singly or in longitudinal pairs on apical antennomeres; claval formula A12–A7:1-2-2-2-2-(1,0); male antenna with tyloid on A5.



Figures 13–18.[70] **13** *Trichoteleia takariva* sp. n., Pronotum, lateral view, male holotype (CASENT 2043217) **14** *Trichoteleia janus* sp. n., Pronotum, lateral view, male (CASENT 2043786) **15** *Trichoteleia oculea* sp. n., Mesosoma, ventrolateral view, female (CASENT 2135908) **16** *Trichoteleia tahotra* sp. n., Mesosoma ventrolateral view, female holotype (OSUC 181002) **17** *Trichoteleia delilah* sp. n., Metasoma, ventrolateral view, female holotype (CASENT 2135905) **18** *Trichoteleia picturata* sp. n., Metasoma, ventrolateral view, female holotype (CASENT 2135904). Scale bars in millimeters.

Mesosoma in dorsal view longer than wide, in lateral view longer than high; pronotum in dorsal view strip-like to moderately broad laterally, anterolateral corners rounded to angulate; transverse pronotal carina present or absent; lateral pronotum without vertical epomial carina but usually with distinct transition line between sculptured cervical pronotal area and smooth lateral pronotal area; dorsal epomial carina

present; lateral face of pronotum slightly to moderately concave below dorsal epomial carina, facing anterolaterally; pronotal setal patch present, accompanied by striate or rugulose sculpture; netrion present, glabrous, moderately wide, open or closed ventrally; anterior margin of mesoscutum weakly to strongly flexed ventrally to meet pronotum; mesoscutum pentagonal in outline, posterolateral corner rounded; parapsidal line visible; notaulus present, percurrent or incomplete and reaching mesoscutal suprahumeral sulcus as a row of punctures; skaphion absent; transscutal articulation well-developed; mesoscutellum transverse, narrowing laterally, posterior margin convex to straight; axilla small, dorsal margin sinuate; metanotum short, metascutellum sparsely to moderately setose, clearly differentiated, apex bifid to bispinose; plical area densely setose; lateral propodeal carina and plica well developed, forming triangular to quadrate lateral propodeal area; mesopleural depression well developed; anterior half of mesopleural carina present; posterior half of mesopleural carina present, absent or indicated by rows of punctures; anteroventral portion of mesepisternum coarsely sculptured to smooth; sternaulus not distinguishable; postacetabular foveae not distinguishable; mesopleural pit present, distinct; anterior margin of ventral portion of mesepisternum and acetabular carina transverse, not extended forward between forecoxae; mesepimeral sulcus indicated by dorsoventral line of punctures or crenulae; posterodorsal corner of mesepimeron prominent, rounded or angulate, not produced into sharp posteriorly directed tooth; mesopleuron with a strong longitudinal ledge or row of robust longitudinal carinae below subalar pit, dorsally delimiting mesopleural furrow; anteroventral portion of metapleuron continuous with lateral face; metapleural triangle often setose; metapleural epicoxal carina present or absent; metapleural epicoxal sulcus absent; paracoxal sulcus present as a dorsoventral line of cells or punctures; metapleural sulcus present; metapleural pit present or absent; posterior margin of metapleuron narrowly lamellate; legs not unusually proportioned; posterior surface of hind coxa smooth, sparsely setose to glabrous; trochantellus absent; tibial spur formula 1-1-1; tarsal formula 5-5-5; pretarsal claws simple.

Wings hyaline to infuscate, often banded or patterned; Sc+R (submarginal vein) straight basal to intersection with Rs+M (basal vein), curved costad apically; R (marginal vein) present, shorter than r (stigmal vein); R1 (postmarginal vein) as long as r or longer; bulla absent; no other tracheate veins in forewing; M+Cu and Rs+M indicated by folds or pigmentation; M (medial vein), Cu (cubital vein), and Rs usually present as folds or lines of faint pigmentation; hindwing with tracheate portion of R present and reaching anterior margin; three hamuli present.

Metasoma generally flattened dorsally; female with 6 terga, 6 sterna visible externally, male with 8 terga, 7 sterna visible externally; submarginal ridge well-developed, defined by narrow laterotergites to form submarginal rim; no spiracles visible; anterior part of T1 laterally compressed, with lateral depression filled with fine setae; T2 with transverse sulcus; female T6 without median raised field of microsetae or secretion; basal transverse ridge on S2 present; lateral S2 with longitudinal depression filled with fine setae; ovipositor tubular, *Scelio*-type.

Diagnosis. *Trichoteleia* may be distinguished from other genera of Scelioninae by the combination of the following characters: eyes setose; facial striae absent between orbital carina and interantennal process, R1 (postmarginal vein) as long as r (stigmal vein) or longer; metascutellum bifid to bispinose, setose; lateral T1 and S2 with patches of dense fine setae.

Comments. The species of *Trichoteleia* exhibit remarkable diversity in size, patterns of sculpture and color, and relative proportions of the body. The variety of sizes and shapes found in this genus suggest a corresponding diversity of host species. No host has been recorded, but the species of *Trichoteleia* are suspected to parasitize the eggs of ground crickets (Gryllidae). This assumption is based on the putative relation of this genus to *Paridris*, which has one documented host association with *Gryllus pennsylvanicus* Burmeister (label data of a specimen in the USNM reported by Masner and Muesebeck, 1968).

The shape of the metascutellum is particularly plastic. It may be present as two large spines (Fig. 19), an apically bispinose plate (Fig. 20), or a narrow strip that is notched medially (Fig. 21). The setation of the metascutellum is always present and is thus a more unambiguously interpreted character for generic identification. Within Platygastroidea, such setation is rare, and is otherwise known to the authors only in *Chromoteleia* Ashmead, *Romilius* Walker, one species of *Paridris* Kieffer, one species of *Triteleia* Kieffer and two species in the subfamily Teleasinae.

Link to Distribution Map. *Trichoteleia* is endemic to Madagascar, the Comoros and the island of Mayotte.

Key to species of *Trichoteleia*

Females

(unknown for *T. takariva*, *T. carinata*)

1 Posterior vertex covered by coarse, concentric, semicircular rugae (Figs 64, 135, 153) **2**

– Posterior vertex punctate to rugose, if rugae present then fine, irregular, or broadly interrupted medially (Figs 189, 207, 266) **4**

2 Striae of pronotum reaching mesoscutal suprahumeral sulcus anteriorly (Fig. 62) ..... ***Trichoteleia albidipes*** **Kieffer**

– Striae of pronotum separated from mesoscutal suprahumeral sulcus by smooth area (Figs 133, 151) **3**

3 A7 with basiconic sensillum (as in Fig. 1); T2–T4 with microsculpture throughout (Fig. 136); T2 weakly striate, few striae reaching posterior margin; T6 densely microsculptured throughout (Fig. 137); metasoma more than 1.5 times as long as head and mesosoma combined (Figs 132, 134) ..... ***Trichoteleia irwini*** **Talamas & Masner, sp. n.**

– A7 without basiconic sensillum (as in Fig. 2); T2–T4 without microsculpture (Fig. 155); T2 distinctly striate throughout, striae reaching posterior margin; T6 with small sparse punctures, otherwise smooth; metasoma less than 1.4 times as long as head and mesosoma combined (Figs 150, 152) ..... ***Trichoteleia ketrona*** **Talamas, sp. n.**

4 Striae of pronotal shoulder forming uniform and continuous band with striae of posterior pronotal sulcus (Figs 11, 12, 157, 211, 282); posterior vertex with fine punctation, punctation sparse to moderately dense, without rugae (Figs 159, 213, 284) **5**

– Posterior margin of pronotum with different patterns of sculpture above and below dorsal epomial carina (Fig. 252) or posterior vertex rugose (Fig. 278).... 7

5 T6 densely microsculptured throughout (Fig. 286) ..... ***Trichoteleia tonsa*** **Talamas, sp. n.**

– T6 with microsculpture or fine rugulae along anterior margin, otherwise smooth with sparse punctation (Figs 161, 215)..... **6**

6 Metapleural triangle smooth, sometimes with very fine, sparse setae (Fig. 157); axillular carina nearly straight and perpendicular to longitudinal axis of body (Fig. 12)..... ***Trichoteleia levii*** **Talamas & Johnson, sp. n.**

– Metapleural triangle coarsely sculptured (Fig. 211); axillular carina rounded posteriorly (Fig. 11) ..... ***Trichoteleia prima*** **Talamas, sp. n.**

7 Forewing with purple metallic sheen (Figs 32, 167, 226); metasoma elongate, dark brown to black (Figs 167, 226) **8**

– Forewing without purple metallic sheen; length and color of metasoma variable..... **9**

8 S2 with median longitudinal carina (as in Fig. 45); wings darkly infuscate (Figs 32, 184, 226); hind coxa yellow (Fig. 222) ..... ***Trichoteleia quazii*** **Talamas, sp. n.**

– S2 without median longitudinal carina; wings moderately infuscate (Fig. 167); hind coxa brown (Fig. 163)..... ***Trichoteleia longiventris*** **Talamas & Masner, sp. n.**

9 Notaulus incomplete or reaching suprahumeral sulcus as a row of punctures (Figs 9, 10); frons below median ocellus evenly punctate throughout (Figs 130, 202, 273), rarely with dorsoventral rugulae laterally; S2 punctate, punctation usually coarse and uniform throughout (Fig. 43) **10**

– Notaulus complete and reaching suprahumeral sulcus as a smooth furrow (Figs 7, 8); frons between median ocellus and antennal scrobe variably sculptured; S2 punctate, smooth or longitudinally striate..... **23**

10 Mandible bidentate (Fig. 77); lateral propodeal area punctate rugose (Fig. 27)..... **11**

– Mandible tridentate; sculpture of lateral propodeal area variable..... **12**

11 Metasoma elongate, length of T5 more than 2.5 times width of posterior margin (Fig. 220); gena broad, with small punctures and well-defined striae (Fig. 217)..... ***Trichoteleia prolixa*** **Talamas, sp. n.**

– Metasoma moderately long, length of T5 less than 2 times width of posterior margin (Fig. 78); gena not broad, with striation confused by dense punctation (Fig. 74) ..... ***Trichoteleia bidentata*** **Talamas, sp. n.**

12 M+Cu and Rs+M veins in forewing spectral, i.e., without pigment, visible only as fold in wing membrane (Fig. 35)..... **13**

– M+Cu and Rs+M veins in forewing nebulous, i.e., indicated by diffuse pigmented lines (Figs 31–34, 36)..... **20**

13 T1 produced anteriorly into horn, horn sometimes small but always with dorsal surface smooth and convex (Figs 67, 246, 272, 298) **14**

– T1 without horn (Figs 55, 138, 173) **18**

14 Forewing with transverse infuscate band medially (Fig. 72); lateral T4 striate throughout (Fig. 72); sculpture of medial T3 reticulate rugose (Fig. 72) ..... ***Trichoteleia bicolor*** **Talamas, sp. n.**

– Forewing hyaline, sometimes with diffuse longitudinal infuscation (Figs 31, 247, 271, 298); sculpture of T4 and medial T3 variable (Figs 250, 274, 298)..... **15**

15 Posterior margin of transverse sulcus on T2 straight (Fig. 298); head and metasoma black, mesosoma red (Figs 293, 295); mandibles dark brown to black (Fig. 297) ..... ***Trichoteleia xantrox*** **Talamas, sp. n.**

– Posterior margin of transverse sulcus on T2 convex (Figs 250, 274); body color pattern not as above; color of mandibles variable **16**

16 Lateral T4–T5 longitudinally strigose (Fig. 119)..... ***Trichoteleia funesta*** **Talamas, sp. n.**

– T4 smooth or with faint striae; T5 without macrosculpture..... **17**

17 T5–T6 sparsely punctate (Fig. 250); gena punctate rugose, broad (Fig. 246); head, mesosoma and metasoma brown (Fig. 245) ..... ***Trichoteleia sphaerica*** **Talamas, sp. n.**

– T5–T6 densely punctate (Fig. 274); gena dorsoventrally strigose, moderately narrow (Fig. 270); head, mesosoma and metasoma black (Fig. 269)..... ***Trichoteleia tezitra*** **Talamas, sp. n.**

18 Forewing with faint infuscation below R (marginal vein) (Fig. 149); metasoma black, head and mesosoma orange (Fig. 144) ..... ***Trichoteleia jiro*** **Talamas, sp. n.**

– Forewing with percurrent transverse infuscate band medially (Figs 57, 170); color pattern variable **19**

19 Metascutellar armature short, posterior margin with small median notch (Fig. 21); T2 longitudinally strigose (Fig. 173); T2–T3 with microsculpture present interstitially (Fig. 173); occipital carina bordered anteriorly by large cells (Fig. 171) ..... ***Trichoteleia minima*** **Talamas, sp. n.**

– Metascutellum markedly bispinose, posterior margin distinctly emarginate (Fig. 58); T2 reticulate rugose (Fig. 60); T2–T3 without microsculpture (Fig. 60); occipital carina bordered anteriorly by medium sized cells (Fig. 58)..... ***Trichoteleia afo*** **Talamas, sp. n.**

20 T2–T4 without microsculpture (Fig. 101); S2 smooth with sparse fine punctation ..... ***Trichoteleia eburata*** **Talamas, sp. n.**

– T2–T4 with microsculpture throughout (Figs 131, 203, 232); S2 variably sculptured **21**

21 Central of keel of frons absent (Fig. 4), if faintly indicated, then not extending onto interantennal process (Fig. 202); metapleural triangle smooth to sparsely and finely punctate (Fig. 199); setation of metapleural triangle absent to sparse (Fig. 199) ..... ***Trichoteleia pauliani*** **(Risbec)**

– Central keel of frons present and extending onto interantennal process (Figs 3, 130); metapleural triangle coarsely sculptured, densely and finely punctate to rugose (Figs 127, 228); setation of metapleural triangle sparse to moderately dense (Figs 127, 228) **22**

22 Apical half of forewing with diffuse infuscation along longitudinal midline (Fig. 31) ..... ***Trichoteleia hemlyae*** **Talamas & Masner, sp. n.**

– Forewing with transverse infuscate band below R (marginal vein) and infuscate patch distally (Fig. 231) ..... ***Trichoteleia ravaka*** **Talamas & Masner, sp. n.**

23 Brachypterous, apex of forewing ending before midpoint of T3 (Figs 122, 192) **24**

– Macropterous, apex or forewing extending beyond posterior margin of T3 .... **26**

24 Horn on T1 with posterodorsally oriented spine at apex (Fig. 102); striae of lateral T4 merging medially in anterior half of tergite (Fig. 107); metascutellar spines large, diverging apically, with large black setae (Figs 103, 105) ..... ***Trichoteleia echinata*** **Talamas, sp. n.**

– Horn on T1 smooth and convex dorsally, without spine (Fig. 121); striae of lateral T4 separated medially by smooth midline field (Figs 125, 197); metascutellar spines variable **25**

25 A7 without basiconic sensillum (as in Fig. 2); lateral T3 and entire surface of T4–T5 obliquely strigose (Fig. 125); basal node on mandible absent (Fig. 124, as in Fig. 255) .. ***Trichoteleia halterata*** **Talamas & Masner, sp. n.**

– A7 with basiconic sensillum (as in Fig. 1); T3, T5 smooth with sparse punctation, lateral T4 sometimes with weak crenulae along anterior margin, otherwise smooth (Fig. 197); basal node on mandible large (Fig. 196) ..... ***Trichoteleia parvipennis*** **Talamas & Masner, sp. n.**

26 Medial frons rugulose (Fig. 279); horn on T1 absent (Fig. 275); posterior vertex coarsely punctate rugose throughout (Fig. 278); forewing with two transverse infuscate bands (Fig. 280) ..... ***Trichoteleia tigris*** **Talamas, sp. n.**

– Medial frons smooth (Figs 89, 95); horn on T1 present or absent; posterior vertex variable, but not coarsely punctate rugose throughout; color of forewing variable **27**

27 Forewing patterned with distinct bands or contrasting infuscate and hyaline areas (Figs 33, 96); postacetabular sulcus present as a smooth furrow (as in Fig. 16); T6 smooth with fine setigerous punctures throughout or at lateral margin (Fig. 303) **28**

– Forewing hyaline to infuscate but without banding; postacetabular sulcus variable; sculpture and punctation of T6 variable **31**

28 A7 with basiconic sensillum (Fig. 1); T2–T3 with microsculpture throughout (Fig. 96); width of T1 along posterior margin greater than 1.6 times length (Fig. 96) ..... ***Trichoteleia delilah*** **Talamas, sp. n.**

– A7 without basiconic sensillum (as in Fig. 2); T2–T3 without microsculpture (Figs 90, 209, 301); width of T1 along posterior margin less than 1.2 times length (Figs 90, 209, 301) **29**

29 Frons below median ocellus dorsoventrally strigose (Fig. 89) ..... ***Trichoteleia cincta*** **Talamas & Masner, sp. n.**

– Frons below median ocellus punctate or punctate rugulose (Figs 208, 304) .. **30**

30 Posterior half of medial mesoscutum longitudinally rugulose (Fig. 207) ..... ***Trichoteleia picturata*** **Talamas, sp. n.**

– Posterior half of medial mesoscutum moderately punctate, otherwise smooth (Fig. 302) ..... ***Trichoteleia zuparkoi*** **Talamas & Masner, sp. n.**

31 Horn on T1 hooked, pointing posteriorly at apex (Fig. 109); metascutellar spines stout and diverging distally (Fig. 111) ..... ***Trichoteleia fisheri*** **Talamas & Masner, sp. n.**

– Horn on T1, if present, smooth or with longitudinal carina at apex, but not curved or pointed posteriorly (Fig. 240); metascutellar spines variable **32**

32 R1 (postmarginal vein) equal in length to r (stigmal vein) (Fig. 36); lateral propodeal area with small apical flange (Figs 25, 26); horn on T1 absent (Figs 180, 262) **33**

– R1 (postmarginal vein) distinctly longer than r (stigmal vein) (Figs 31–33, 35); lateral propodeal area without apical flange (Figs 27–28); horn on T1 usually present **34**

33 Lateral pronotum with coarse striae extending nearly to cervical pronotal area (Fig. 15); A7 without basiconic sensillum (as in Fig. 2); postacetabular sulcus comprised of large cells (Fig. 15); T4 punctate except along midline (Fig. 185) ..... ***Trichoteleia oculea*** **Talamas, sp. n.**

– Lateral pronotum with short irregular striae or rugulae posteriorly (Fig. 16); A7 with basiconic sensillum (as in Fig. 1); postacetabular sulcus present as a smooth furrow (Fig. 16); T4 devoid of punctation and sculpture except along lateral margins (Fig. 262) ... ***Trichoteleia tahotra*** **Talamas & Masner, sp. n.**

34 T3 transversely strigose (Fig. 191); frons below median ocellus dorsoventrally striate (Fig. 190); lateral pronotum with pronounced longitudinal striae (Fig. 187); interantennal process enlarged dorsally (Fig. 187); body entirely black ..... ***Trichoteleia orona*** **Talamas & Masner, sp. n.**

– T3 smooth or with longitudinally oriented lines of sculpture; other characters variable but not in the combination above **35**

35 Posterior margin of metapleuron with posterolaterally projecting triangular spine near intersection with metapleural sulcus (Fig. 29); setal patch on lat-

eral T1 bordered by flange dorsally (Fig. 29); hind wing with density of microtrichae posterior to Sc+R (submarginal vein) reduced relative to remainder of wing membrane (Fig. 34) .... ***Trichoteleia nify*** **Talamas & Masner, sp. n.**

– Posterior margin of metapleuron smooth or bluntly angulate near intersection with metapleural sulcus (Figs 139, 252); setal patch on lateral T1 with carina dorsally but without flange; hind wing with density of microtrichae uniform throughout (Figs 31–33) **36**

36 Lateral T4 smooth or with small patch of faint strigae (Figs 143, 256); T5 with sparse punctation, otherwise smooth (Figs 143, 256) **37**

– Lateral T4–T5 with percurrent longitudinal strigae or rugulae (Figs 238, 244, 292); T5 with moderately dense, large punctures laterally (Figs 238, 244, 292) **38**

37 Mandibular node present, notch present just distad of node (Fig. 142); gena with dorsoventral rugae (Fig. 139); central keel on frons extending onto dorsal surface of interantennal process (Fig. 6) .... ***Trichoteleia janus*** **Talamas, sp. n.**

– Mandibular node and notch absent (Fig. 255); gena with fine dorsoventral striae (Fig. 252); central keel on frons ventrally attenuating or diverging laterally around interantennal process (Fig. 255) ..... ***Trichoteleia subtilis*** **Talamas & Masner, sp. n.**

38 Frons below median ocellus evenly dorsoventrally strigose throughout (Fig. 291) ..... ***Trichoteleia warreni*** **Talamas & Masner, sp. n.**

– Frons below median ocellus smooth or with dorsoventral strigae that attenuate medially (Figs 237, 243) **39**

39 Rugae laterad of median ocellus prominent (Fig. 237); mesoscutum densely punctate, punctures moderately coarse (Fig. 236); cells of occipital rim large (Fig. 236); body dark brown to black ..... ***Trichoteleia rugifrons*** **Talamas & Masner, sp. n.**

– Rugae laterad of median ocellus faint or absent (Fig. 243); mesoscutum with moderately dense punctation, punctures small (Fig. 242); cells of occipital rim small (Fig. 242); body yellow throughout ..... ***Trichoteleia solocis*** **Talamas, sp. n.**

Males

(unknown for *T. cincta, T. delilah, T. echinata, T. fisheri, T. funesta, T. halterata, T. ketrona, T. longiventris, T. oculea, T. minima, T. parvipennis, T. picturata, T. prima, T. prolixa, T. ravaka, T. solocis, T. sphaerica, T. warreni, T. xantrox* and *T. zuparkoi*)

1 Posterior vertex covered by coarse, concentric, semicircular rugae (Figs 64, 135) **2**

– Posterior vertex punctate to rugose, if rugae present then fine, irregular, or broadly interrupted medially (Figs 189, 266, 278) **3**

2 Striae of pronotum reaching mesoscutal suprahumeral sulcus anteriorly (Fig. 62) ..... ***Trichoteleia albidipes*** **Kieffer**

– Striae of pronotum separated from mesoscutal suprahumeral sulcus by smooth area (Fig. 133) ..... ***Trichoteleia irwini*** **Talamas & Masner, sp. n.**

3 Striae of pronotal shoulder forming uniform and continuous band with striae of posterior pronotal sulcus (Figs 12, 157, 282, as in 11, 211); posterior vertex with fine punctation, punctation sparse to moderately dense, without rugae (Figs 159, 284); metapleural triangle smooth or with fine sparse punctures (Figs 157, 282) **4**

– Posterior margin of pronotum with different patterns of sculpture above and below dorsal epomial carina (Figs 222, 246), or posterior vertex rugose (Figs 266, 278); metapleural triangle usually coarsely punctate or rugulose. **5**

4 Axillular carina nearly straight and perpendicular to longitudinal axis of body (Fig. 12); mesosoma dark red to yellow (Figs 12, 157, 305) ..... ***Trichoteleia levii*** **Talamas & Johnson, sp. n.**

– Axillular carina rounded posteriorly (as in Fig. 11); mesosoma dark brown throughout (Fig. 282) ..... ***Trichoteleia tonsa*** **Talamas, sp. n.**

5 S2 coarsely punctate throughout with longitudinal median carina (Fig. 45); metasoma dark brown to black, elongate (Figs 81, 225) **6**

– Sculpture of S2 variable, if coarsely punctate then without longitudinal median carina; color and length of metasoma variable 7

6 T2 with prominent sublateral carina (Fig. 84); posterior margin of transverse sulcus on T2 straight between sublateral carinae (Fig. 84); T2 1.5 times as long as wide (Fig. 84); wings slightly infuscate (Fig. 81) ..... ***Trichoteleia carinata*** **Talamas & Johnson, sp. n.**

– T2 with longitudinal strigae of equal height throughout (Fig. 225); posterior margin of transverse sulcus on T2 convex (Fig. 225); T2 less than 1.2 times as long as wide (Fig. 225); wings darkly infuscate throughout (Fig. 225) ..... ***Trichoteleia quazii*** **Talamas, sp. n.**

7 Notaulus incomplete or reaching mesoscutal suprahumeral sulcus as a row of punctures (Figs 9, 10); frons below median ocellus evenly punctate throughout (Figs 130, 202, 273), rarely with dorsoventral rugulae laterally; S2 punctate, punctation usually coarse and uniform throughout (Fig. 43) **8**

– Notaulus complete and reaching mesoscutal suprahumeral sulcus as a smooth furrow (Fig. 7, 8); sculpture of frons below median ocellus variable; S2 punctate, smooth, or longitudinally striate **14**

8 M+Cu and Rs+M in forewing spectral, i.e., not pigmented (Fig. 35) **9**

– M+Cu and Rs+M in forewing nebulous, i.e., pigmented (Figs 31–34, 36, 231) **13**

9 Mandible bidentate (Fig. 77); lateral propodeal area punctate rugose (Fig. 27) ..... ***Trichoteleia bidentata*** **Talamas, sp. n.**

– Mandible tridentate; sculpture of lateral propodeal area variable **10**

10 T3 longitudinally strigose (Fig. 274) ..... ***Trichoteleia tezitra*** **Talamas & Masner, sp. n.**

– T3 reticulate to reticulate rugose (Figs 60, 149) **11**

11 T2–T4 without interstitial microsculpture (Fig. 41); forewing with infuscate band medially (Fig. 35); width of posterior margin of T1 more than 2 times length of T1 (Fig. 41) ..... ***Trichoteleia afo*** **Talamas & Masner, sp. n.**

– T2–T4 with interstitial microsculpture present (Fig. 42); forewing hyaline throughout (Fig. 42); width of posterior margin of T1 less than 2 times length of T1 (Fig. 42) **12**

12 Dorsal metapleural area with smooth glabrous strip (Fig. 52); head and mesosoma entirely black (Figs 51, 52)..... ***Trichoteleia bicolor*** **Talamas, sp. n.**

– Dorsal metapleural area entirely punctate rugose (Fig. 50); head and mesosoma orange to pale brown becoming darker dorsally (Figs 49, 50)..... ..... ***Trichoteleia jiro*** **Talamas & Masner, sp. n.**

13 Central of keel of frons absent (Fig. 4), if faintly present then not extending onto interantennal process (Fig. 202); metapleural triangle mostly smooth, with very sparse fine punctures along anteroventral perimeter (Fig. 199) .... ***Trichoteleia pauliani*** **(Risbec)**

– Central keel of frons present and extending onto interantennal process (Figs 3, 130); metapleural triangle rugulose with fine to coarse punctation (Fig. 127) or coarsely punctate rugose..... ..... ***Trichoteleia hemlyae*** **Talamas & Masner, sp. n.**

14 R1 (postmarginal vein) equal in length to r (stigmal vein) (Fig. 36); postacetabular sulcus present as a smooth furrow (Fig. 16); posterior propodeal projection present as small apical flange (Fig. 25)..... ..... ***Trichoteleia tahotra*** **Talamas & Masner, sp. n.**

– R1 (postmarginal vein) longer than r (stigmal vein) (as in Figs 31–32); postacetabular sulcus comprised of cells, cells of variable size (Figs 139, 187, 234, as in Fig. 15); posterior propodeal projection absent (Fig. 28, as in Fig. 27).. ..... **15**

15 Lateral propodeal area large, mostly smooth (Figs 28, 53); T2–T3 densely microsculptured (Fig. 54); smooth area on frons small; metascutellar spines short, blunt (Figs 28, 53); posterior vertex coarsely punctate rugose (Fig. 53); occipital rim comprised of large cells (Fig. 53); frons below median ocellus densely punctate, without dorsoventral strigae (Fig. 279)..... ..... ***Trichoteleia tigris*** **Talamas, sp. n.**

– Lateral propodeal area small to moderate sized, if large then coarsely rugose; T2–T3 microsculpture absent or very shallowly impressed; smooth area on medial frons large; other characters variable but without the combination above **16**

16 Posterior margin of metapleuron with small posterolaterally projecting spine near intersection with metapleural sulcus (Fig. 29); density of microtrichae on hind wing reduced posterior to Sc+R (as in Fig. 34); T3 smooth or with very faint traces of longitudinal sculpture (Fig. 37) .... ***Trichoteleia nify*** **Talamas & Masner, sp. n.**

– Metapleural spine absent, sometimes a blunt angular projection present on posterior margin (Fig. 139); density of microtrichae uniform throughout hind wing (Figs 31–33); sculpture of T3 variable **17**

17 T5 densely punctate throughout (Fig. 40); interantennal process with large dorsal flange (Fig. 187); frons below median ocellus dorsoventrally strigose (Fig. 190)..... ***Trichoteleia orona*** **Talamas & Masner, sp. n.**

– T5 sparsely to moderately punctate (Fig. 265), punctation usually reduced medially, crenulae sometimes present laterally; interantennal process simple or with dorsal carina, rarely with small dorsal flange; frons below median ocellus variable..... **18**

18 Area between antero-admedian lines with parallel transverse rugae (Fig. 7); pronotal cervical sulcus present as a smooth furrow; body black (Fig. 263) ... . ***Trichoteleia takariva*** **Talamas, sp. n.**

– Area between antero-admedian lines punctate, very rarely with 1–2 rugae (Fig. 8); other characters variable but without the combination above **19**

19 T5 punctate rugulose (Fig. 238); lateral T4 with longitudinal strigae or reticulations (Fig. 238)..... ***Trichoteleia rugifrons*** **Talamas & Masner, sp. n.**

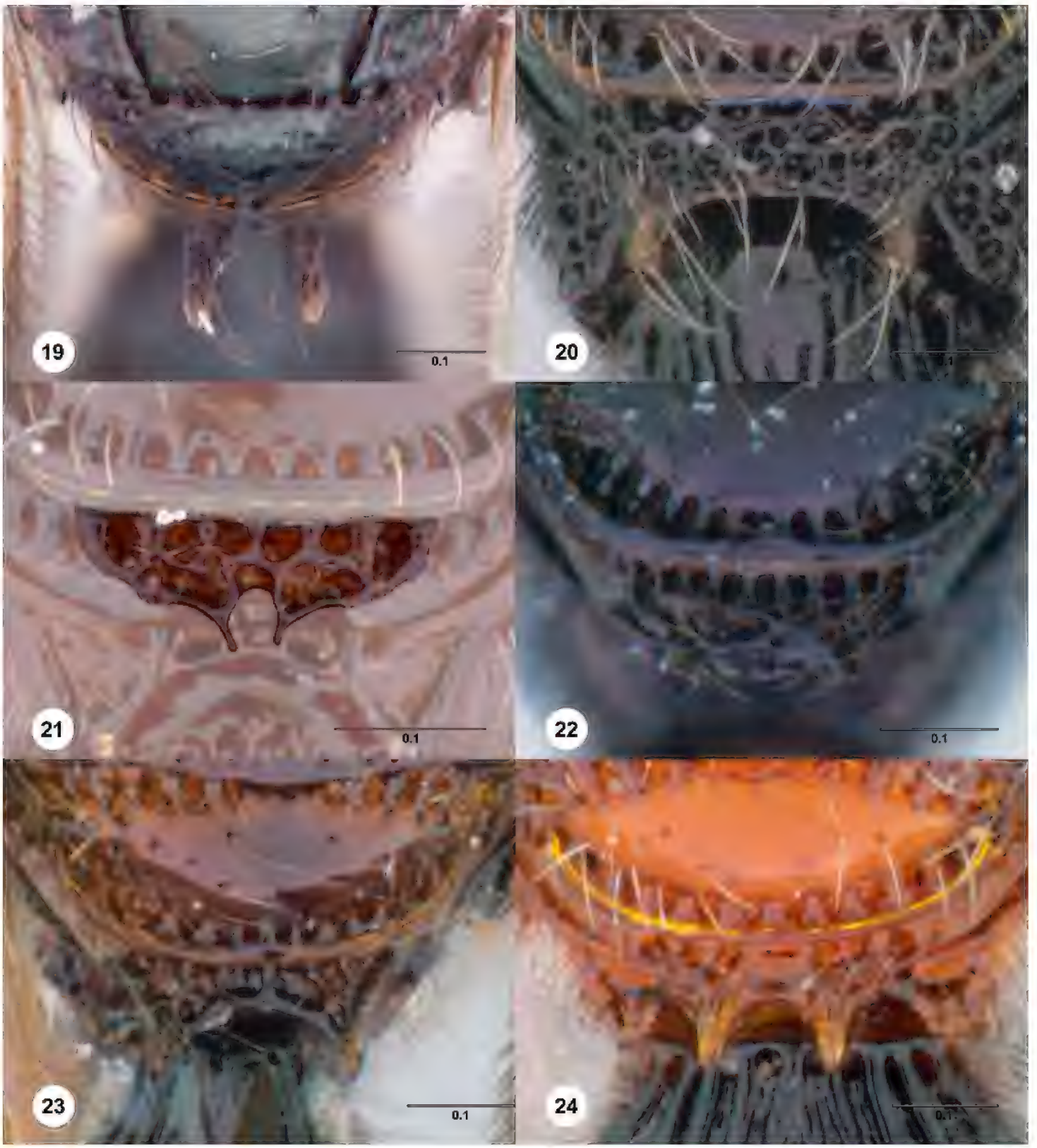
– T5 smooth between punctures (Figs 143, 256); lateral T4 smooth or with small patch of very faint striae or crenulae (Figs 143, 256)..... **20**

20 Central keel on frons ventrally bifurcating around interantennal process (Figs 5, 255); gena finely striate or punctate rugulose (Fig. 252) .... ***Trichoteleia subtilis*** **Talamas & Masner, sp. n.**

– Central keel on frons extending onto dorsal surface of interantennal process (Figs 6, 139); gena coarsely strigose (Fig. 139) .... ***Trichoteleia janus*** **Talamas, sp. n.**

Trichoteleia afo **Talamas, sp. n.**
urn:lsid:zoobank.org:act:FD95381D-74B9-483F-AC17-89E6F4539047
urn:lsid.biosci.ohio-state.edu:osuc_concepts:241291
Figures 24, 35, 41, 43, 55–60; Morphbank[7]

Description. Female body length: 2.67–3.06 mm (n=20). Male body length: 2.56–2.80 mm (n=21). Color of head: dark orange, becoming brown at vertex; orange throughout. Central keel of frons: present, ending above interantennal process. Sculpture of medial frons in female: smooth. Sculpture of medial frons in male: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: punctate rugulose throughout; punctate rugulose laterally, smooth medially. Sculpture of posterior vertex: densely punctate; moderately punctate, rugose posterior to eyes and posterior ocellus. Occipital rim: comprised of small to miniscule cells. Sculpture of gena: punctate rugose; dorsoventrally strigose. Basiconic sensillum on A7: absent.



Figures 19–24.[71] **19** *Trichoteleia tahotra* sp. n., Metascutellum, anterodorsal view, female (OSUC 181001) **20** *Trichoteleia bidentata* sp. n., Metascutellum, dorsal view, female holotype (CASENT 2136543) **21** *Trichoteleia minima* sp. n. Metascutellum, dorsal view, female holotype (CASENT 2043543) **22** *Trichoteleia tigris* sp. n., Metascutellum, dorsal view, male (CASENT 2135966) **23** *Trichoteleia janus* sp. n., Metascutellum, dorsal view, female (CASENT 2042242) **24** *Trichoteleia afo* sp. n., Metascutellum, dorsal view, female (CASENT 2043326). Scale bars in millimeters.

Color of mesosoma in female: orange throughout. Color of mesosoma in male: variably red to black. Sculpture along posterior pronotal sulcus: rugulose. Notaulus: smooth furrow incomplete, reaching suprahumeral sulcus as row of punctures. Sculpture of medial mesoscutum: smooth and sparsely punctate posteriorly, densely punctate and transverely rugulose anteriorly. Sculpture of mesoscutellum: smooth with sparse

fine punctures throughout. Postacetabular sulcus: comprised of large cells; comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: coarsely punctate. Sculpture of posterolateral mesepisternum: coarsely punctate. Sculpture of ventral surface of mesepisternum: moderately punctate. Setation of ventral metapleural area: absent. Setation of metapleural triangle: moderately dense. Sculpture of metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex. Color of legs: basal tibia and tarsomeres white, otherwise brown.

Color of metasoma in female: black. Color of metasoma in male: dark brown to black throughout. Posterior margin of transverse sulcus on T2: straight. Sublateral tergal carina on T2: absent. Microsculpture on T2: absent. Microsculpture on T3: absent. Microsculpture on T4: absent. Horn on T1 in female: absent. Macrosculpture of T2 in female: reticulate rugose throughout. Macrosculpture of medial T3 in female: reticulate rugose. Macrosculpture of lateral T3 in female: reticulate rugose. Macrosculpture of medial T4 in female: punctate rugose; reticulate. Macrosculpture of lateral T4 in female: punctate rugulose. Punctation of T4 in female: moderately dense throughout. Macrosculpture of T5 in female: absent. Punctation of T5 in female: sparse along midline, otherwise dense. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth with sparse moderate sized punctures. Macrosculpture of T2 in male: reticulate rugose throughout. Macrosculpture of medial T3 in male: reticulate rugose. Macrosculpture of lateral T3 in male: reticulate rugose. Macrosculpture of T4 in male: rugulose throughout. Punctation of T4 in male: moderately dense throughout. Macrosculpture of T5 in male: absent. Punctation of T5 in male: dense throughout. Sculpture of S2: coarsely punctate throughout. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: hyaline with transverse infuscate band medially. Color of forewing in male: hyaline with transverse infuscate band medially. Color of hind wing: hyaline throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: spectral.

Diagnosis. This species is most similar to *T. jiro* in color pattern, size, and habitus. It may be distinguished by the coarse reticulate rugose sculpture of T2–T3 (Figs 41, 60) and the single transverse band in the forewing (Fig. 35).

Etymology. This species is given the name *afo*, meaning "fire" in Malagasy, for the bright red color of the head and mesosoma in females. The epithet is used as a noun in apposition.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=241291]

Material Examined. Holotype, female: **MADAGASCAR:** Antsiranana Auto. Prov., brushy area, MA-01-04A-02, 1km W Sakalava Beach, 12°15'59"S 49°23'42"E, 30m, 23.I–27.I.2001, malaise trap, M. E. Irwin, E. I. Schlinger & R. Harin'Hala, OSUC 143346 (deposited in CASC). Paratypes: **MADAGASCAR:** 21 females, 30

males, CASENT 2042214, 2042915–2042916, 2043326–2043327, 2043339, 2043391, 2043512–2043513, 2043775–2043781, 2043783, 2133948, 2134576, 2134804, 2134839, 2136213–2136217, 2136577, 2136579, 2136582, 2136589, 2136598–2136599, 2136603, 2137670, OSUC 143327 (CASC); OSUC 143344, 186062 (CNCI); CASENT 2042728, 2137960, OSUC 143325, OSUC 143326, OSUC 143328, OSUC 143330, OSUC 143331, OSUC 143332, OSUC 143342, OSUC 143343, OSUC 143345, OSUC 186063, OSUC 186064, OSUC 186065 (OSUC).

Trichoteleia albidipes Kieffer

urn:lsid:zoobank.org:act:1335620B-6439-47E8-AE58-D1292D033DE1
urn:lsid.biosci.ohio-state.edu:osuc_concepts:5507
Figures 61–66; Morphbank[8]

Trichoteleia albidipes Kieffer, 1910: 531 (original description); Kieffer, 1926: 402 (description); Risbec, 1956: 252 (description of male).

Notes. In the introduction of the paper in which this species was described, Kieffer (1910) stated that the specimens would be deposited in the Königliche Zoologische Museum in Berlin. However, the curator of Hymenoptera reports that the type species of the genera of Scelioninae described by Kieffer are not present. We conclude that this material was probably lost as a consequence of damage to that institution in World War II. We believe that the establishment of a neotype for *T. albidipes* is highly desirable in order to stabilize interpretation of the genus *Trichoteleia*. Kieffer's original description contained three characters that, in combination, we believe enable us to identify this species among the examined specimens. These are: cheeks with striae meeting medially at vertex, T2–T3 finely longitudinally striate, and mesopleuron horizontally striate. The collection locality of the neotype is less than 50 miles from that of the original holotype specimen. No host data are known for *Trichoteleia,* therefore it is impossible to be certain that the neotype parasitizes the same host as the lost holotype. In accordance with article 75 of the Code, specimen CASENT 2132453 (deposited in CASC) is designated as the neotype of *Trichoteleia albidipes*.

Description. Female body length: 2.57–3.25 mm (n=19). Male body length: 2.36–2.94 mm (n=6). Color of head: dark brown to black. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Sculpture of medial frons in male: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: punctate throughout with a groove parallel to orbital carina. Sculpture of posterior vertex: concentrically rugose. Sculpture of gena: coarsely striate. Basiconic sensillum on A7: absent.

Color of mesosoma in female: dark brown to black. Color of mesosoma in male: dark brown to black. Sculpture along posterior pronotal sulcus: striate, striae reaching

dorsal pronotum. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth with sparse fine punctures throughout. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present; present only in anterior half. Sculpture along ventral half of prespecular sulcus: longitudinally striate. Sculpture of posterolateral mesepisternum: smooth; smooth except for 1 or 2 striae parallel to mesopleural carina. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: smooth; finely punctate. Posterior margin of metapleuron below propodeal spiracle: with blunt kink near intersection with metapleural sulcus. Color of legs: coxae and trochanters yellow, otherwise pale brown, hindlegs the darkest.

Color of metasoma in female: dark brown to black throughout. Color of metasoma in male: dark brown to black throughout. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: absent. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally striate throughout; weakly longitudinally striate throughout. Macrosculpture of medial T3 in female: weakly longitudinally striate; longitudinally striate. Macrosculpture of lateral T3 in female: longitudinally striate; weakly longitudinally striate. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: weakly longitudinally strigose; absent. Punctation of T4 in female: absent in medial third, sparse laterally; sparse throughout. Macrosculpture of T5 in female: absent. Punctation of T5 in female: moderately dense throughout; dense throughout; absent along midline, otherwise dense. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth with sparse fine setigerous punctures throughout. Macrosculpture of T2 in male: longitudinally striate throughout. Macrosculpture of medial T3 in male: weakly longitudinally striate. Macrosculpture of lateral T3 in male: longitudinally striate. Macrosculpture of T4 in male: longitudinally strigose laterally; absent. Punctation of T4 in male: sparse throughout. Macrosculpture of T5 in male: absent. Punctation of T5 in male: moderately dense throughout. Sculpture of S2: longitudinally striate anteriorly, smooth posteriorly. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: slightly infuscate throughout. Color of forewing in male: slightly infuscate throughout. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. The striae that extend from the posterior margin of the lateral pronotum to the mesoscutal suprahumeral sulcus (Fig. 62) distinguish this species of *Trichoteleia* from all others. It is similar to *T. irwini* and to *T. ketrona* in the concentric rugosity of the posterior vertex and gena.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=5507]

Material Examined. Neotype, female (present designation): **MADAGASCAR:** Toamasina Auto. Prov., parcel 3, littoral forest, BLF10730, Tampolo, 17°17'00"S 49°26'00"E, 10m, 14.IV.2004, yellow pan trap, CASENT 2132453 (deposited in CASC). Other material: **MADAGASCAR:** 21 females, 7 males, CASENT 2043341, 2132454–2132457, 2132459–2132462, 2132464, 2132475, 2132484, 2132490, 2133925, 2135944, 2136863, 2137948, OSUC 215603 (CASC); OSUC 181020 (CNCI); CASENT 2042241, 2042287, 2132458, 2132463, 2132465, 2132501, 2134750 (OSUC); OSUC 181018–181019 (SCAU).

Trichoteleia bicolor Talamas, sp. n.

urn:lsid:zoobank.org:act:76FBEDE5-0295-4558-93B3-E1AABAC80343
urn:lsid.biosci.ohio-state.edu:osuc_concepts:243408
Figures 51–52, 67–72, 307–308; Morphbank[9]

Description. Female body length: 2.74 mm (n=1). Male body length: 2.35–2.80 mm (n=2). Color of head: dark brown to black; reddish brown. Central keel of frons: present, ending above interantennal process. Sculpture of medial frons in female: smooth. Sculpture of medial frons in male: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: dorsoventrally strigose throughout with coarsely punctate interstices. Sculpture of posterior vertex: punctate rugulose. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: punctate rugose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: reddish brown throughout. Color of mesosoma in male: dark brown to black. Sculpture along posterior pronotal sulcus: rugulose. Notaulus: smooth furrow incomplete, reaching suprahumeral sulcus as row of punctures. Sculpture of medial mesoscutum: smooth and sparsely punctate posteriorly, densely punctate and transverely rugulose anteriorly. Sculpture of mesoscutellum: smooth with sparse fine punctures throughout. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: coarsely punctate. Sculpture of posterolateral mesepisternum: coarsely punctate. Sculpture of ventral surface of mesepisternum: moderately punctate. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle: with blunt kink near intersection with metapleural sulcus. Color of legs: brown throughout.

Color of metasoma in female: reddish brown. Color of metasoma in male: dark brown to black throughout. Posterior margin of transverse sulcus on T2: straight. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: present. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: reticulate rugose medially, longitudinally strigose laterally. Macrosculpture of medial T3 in female: reticulate rugose. Macrosculpture of lateral T3 in female: longitudinally strigose. Mac-

rosculpture of medial T4 in female: longitudinally strigose. Macrosculpture of lateral T4 in female: longitudinally strigose. Punctation of T4 in female: sparse throughout. Macrosculpture of T5 in female: weakly rugulose laterally. Punctation of T5 in female: moderately dense throughout. Shape of T5 in female: width of posterior margin less than length. Microscupture on T6 in female: absent. Sculpture of T6 in female: finely punctate throughout. Macrosculpture of T2 in male: reticulate rugose medially, longitudinally strigose laterally. Macrosculpture of medial T3 in male: reticulate. Macrosculpture of lateral T3 in male: longitudinally strigose. Macrosculpture of T4 in male: longitudinally strigose throughout. Punctation of T4 in male: sparse throughout. Macrosculpture of T5 in male: weakly rugulose laterally. Punctation of T5 in male: moderately dense throughout. Sculpture of S2: coarsely punctate throughout. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: hyaline with transverse infuscate bands medially and apically. Color of forewing in male: hyaline throughout. Color of hind wing: hyaline throughout. Density of setation in fore wing: reduced posterior to Sc+R in basal half. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: spectral.

Diagnosis. Females of *T. bicolor* are most similar to *T. sphaerica*. The present species may be distinguished from *T. sphaerica* in having two transverse bands of infuscation in the forewing (Fig. 72).

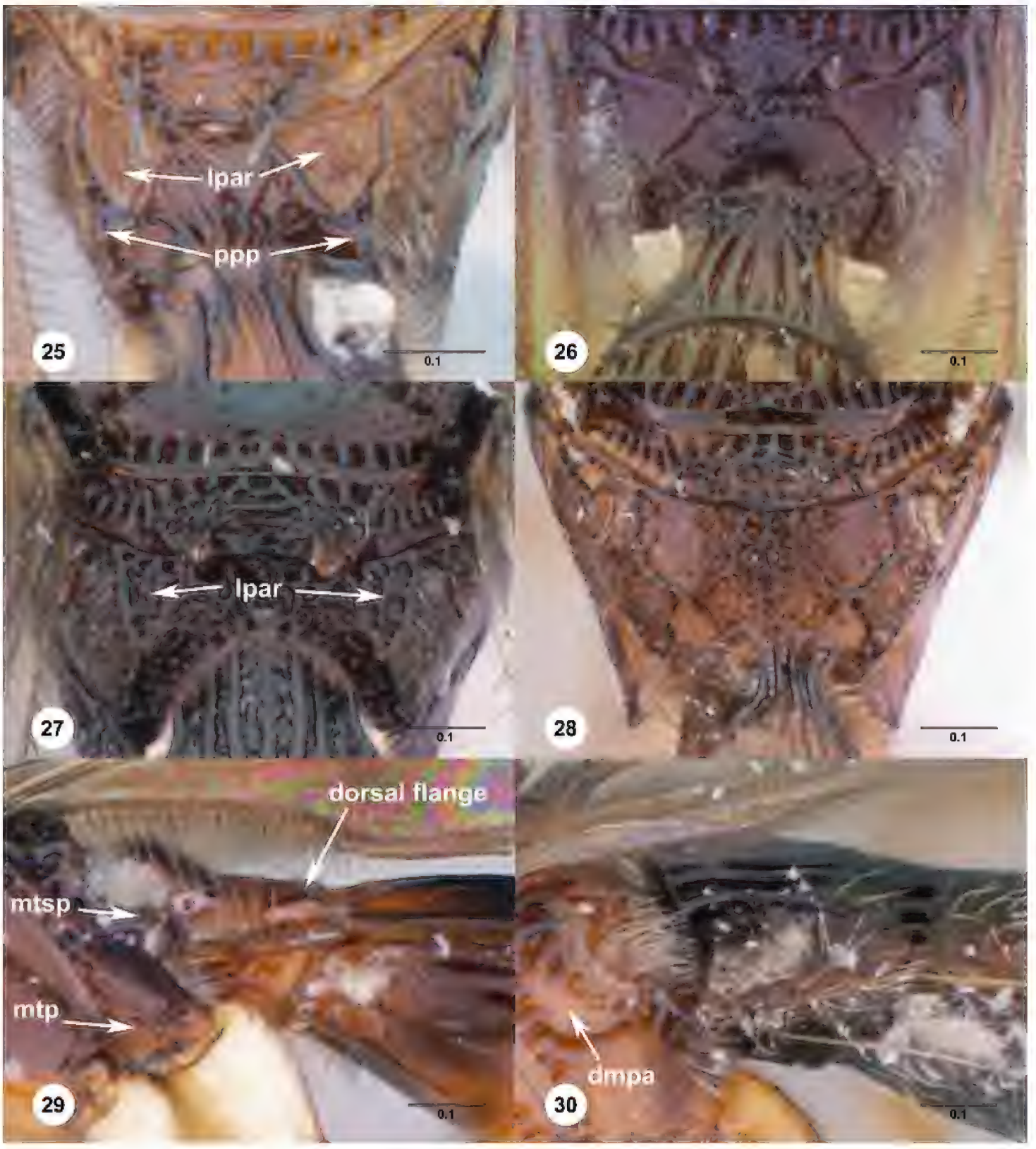
Etymology. This species is named for the color dimorphism in the wings and body color between males and females. The epithet is a noun in apposition.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=243408]

Material Examined. Holotype, female: **MADAGASCAR:** Fianarantsoa Auto. Prov., E of Interpretive Center, stream / open area, MA-02-11A-21, nr. Isalo National Park, 22°37.60'S 45°21.49'E, 750m, 24.III–30.III.2002, malaise trap, R. Harin'Hala, CASENT 2135889 (deposited in CASC). Paratypes: **MADAGASCAR:** 2 males, CASENT 2135801, 2136190 (CASC).

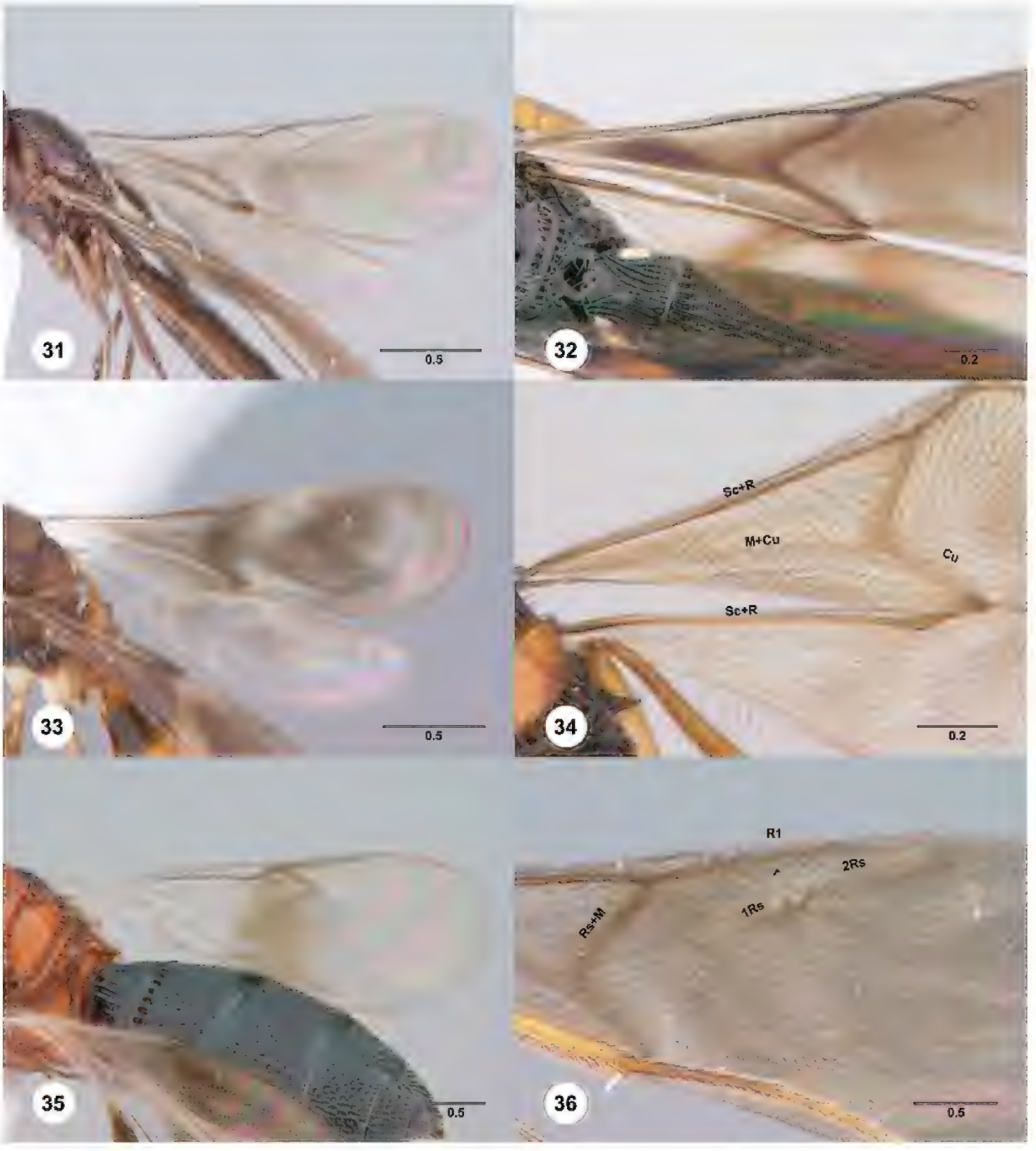
***Trichoteleia bidentata* Talamas, sp. n.**
urn:lsid:zoobank.org:act:BA80C498-AA3C-4AEF-9C94-B99356B4B178
urn:lsid.biosci.ohio-state.edu:osuc_concepts:241275
Figures 20, 27, 73–78; Morphbank[10]

Description. Female body length: 4.64 mm (n=1). Male body length: 3.53 mm (n=1). Color of head: dark brown to black. Central keel of frons: present, ending above interantennal process. Sculpture of medial frons in female: punctate with irregularly shaped smooth area. Sculpture of medial frons in male: smooth. Number of mandibular teeth: two. Basal node on mandible: present. Sculpture of frons below median ocellus: densely punctate throughout. Sculpture of posterior vertex: densely punctate. Sculpture of gena: punctate rugose. Basiconic sensillum on A7: absent.



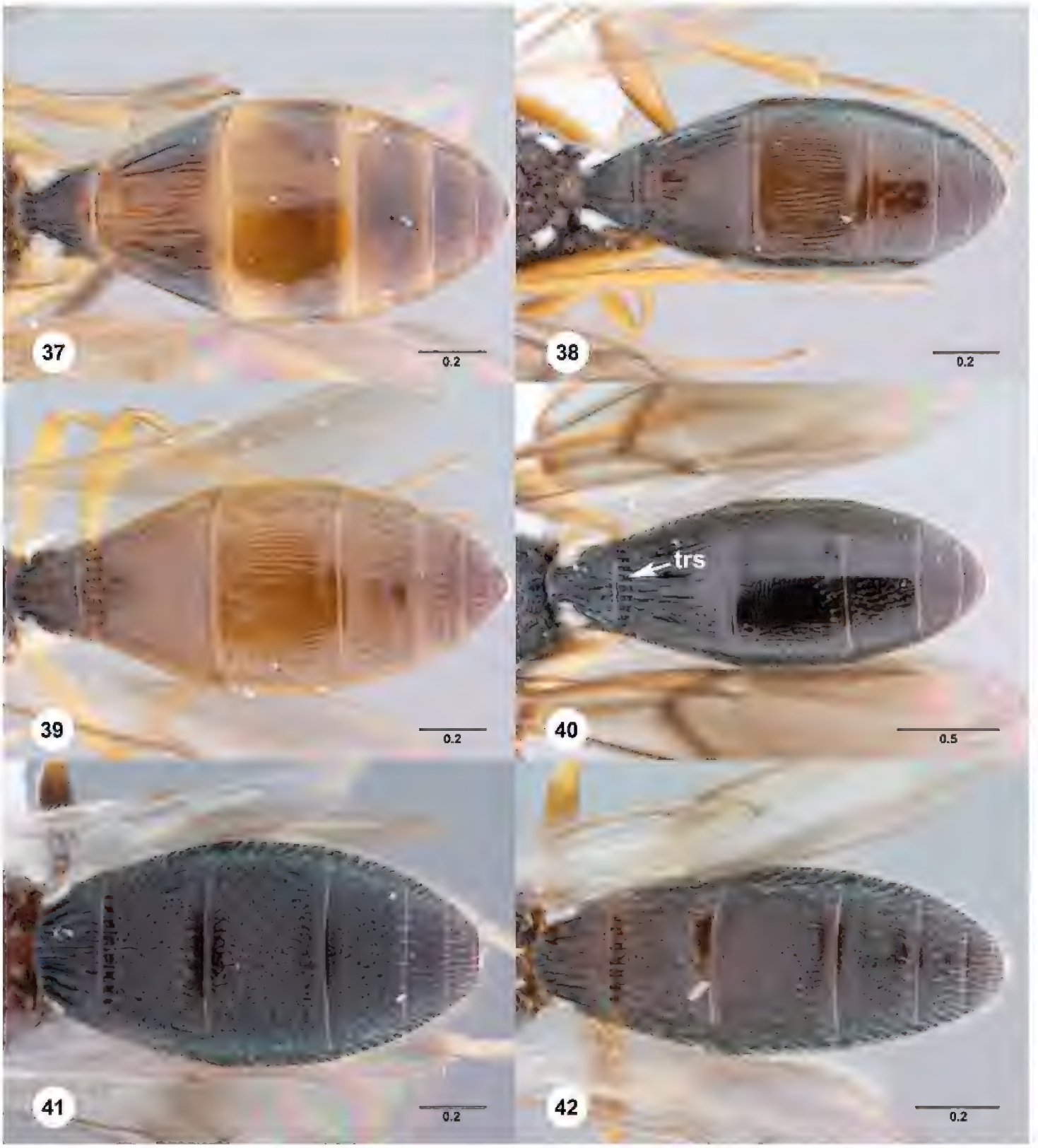
Figures 25–30.[72] **25** *Trichoteleia tahotra* sp. n., Propodeum, dorsal view, female (CASENT 2043325) **26** *Trichoteleia oculea* sp. n., Propodeum, posterodorsal view, female (CASENT 2135907) **27** *Trichoteleia bidentata* sp. n., Propodeum, posterodorsal view, male (CASENT 2132802) **28** *Trichoteleia tigris* sp. n., Propodeum, posterodorsal view, male (CASENT 2135854) **29** *Trichoteleia nify* sp. n., Metapleuron and T1, lateral view, female holotype (CASENT 2135909) **30** *Trichoteleia levii* sp. n., Metapleuron and T1, lateral view, female (CASENT 2043789). Scale bars in millimeters.

Color of mesosoma in female: dark brown to black. Color of mesosoma in male: dark brown to black. Sculpture along posterior pronotal sulcus: rugulose. Notaulus: smooth furrow incomplete, reaching suprahumeral sulcus as row of punctures. Sculpture of medial mesoscutum: smooth and sparsely punctate posteriorly, densely punctate and transverely rugulose anteriorly. Sculpture of mesoscutellum: smooth



Figures 31–36.[73] **31** *Trichoteleia hemlyae* sp. n., Fore wing and hind wing, dorsal view, male (CASENT 2132758) **32** *Trichoteleia quazii* sp. n., Fore wing and hind wing, dorsal view, female holotype (CASENT 2132026) **33** *Trichoteleia picturata* sp. n., Fore wing and hind wing, dorsal view, female holotype (CASENT 2135904) **34** *Trichoteleia nify* sp. n., Fore wing and hind wing, dorsal view, male (CASENT 2135884) **35** *Trichoteleia afo* sp. n., Fore wing, dorsal view, female (CASENT 2043326) **36** *Trichoteleia tahotra* sp. n., Fore wing, dorsal view, male (CASENT 2134186). Scale bars in millimeters.

with sparse fine punctures throughout. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: coarsely punctate. Sculpture of posterolateral mesepisternum: coarsely punctate. Sculpture of ventral surface of mesepisternum: moderately punctate. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of



Figures 37–42.[74] **37** *Trichoteleia tigris* sp. n., Metasoma, dorsal view, male (CASENT 2134160) **38** *Trichoteleia janus* sp. n., Metasoma, dorsal view, male (CASENT 2043786) **39** *Trichoteleia rugifrons* sp. n., Metasoma, dorsal view, male (CASENT 2135938) **40** *Trichoteleia orona* sp. n., Metasoma, dorsal view, male (CASENT 2134153) **41** *Trichoteleia afo* sp. n., Metasoma, dorsal view, male (CASENT 2134153) **42** *Trichoteleia jiro* sp. n., Metasoma, dorsal view, male (OSUC 143329). Scale bars in millimeters.

metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex. Color of legs: femora and metacoxa brown, otherwise yellow.

Color of metasoma in female: black. Color of metasoma in male: dark brown to black throughout. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture

on T3: present. Microsculpture on T4: absent. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: reticulate rugose throughout. Macrosculpture of medial T3 in female: rugulose. Macrosculpture of lateral T3 in female: reticulate rugose. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: longitudinally strigose. Punctation of T4 in female: sparse along midline, otherwise dense. Macrosculpture of T5 in female: longitudinally strigose laterally. Punctation of T5 in female: absent along midline, otherwise dense. Shape of T5 in female: width of posterior margin less than length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth along midline, densely and finely punctate laterally. Macrosculpture of T2 in male: reticulate rugose throughout. Macrosculpture of medial T3 in male: weakly rugulose. Macrosculpture of lateral T3 in male: punctate rugose. Macrosculpture of T4 in male: punctate rugulose laterally. Punctation of T4 in male: sparse along midline, otherwise dense. Macrosculpture of T5 in male: weakly rugulose laterally. Punctation of T5 in male: sparse along midline, otherwise dense throughout. Sculpture of S2: coarsely punctate throughout. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: hyaline with transverse infuscate band medially. Color of forewing in male: hyaline with transverse infuscate band medially. Color of hind wing: hyaline throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: spectral.

Diagnosis. Bidentate mandibles are present in two known species of *Trichoteleia, T. bidentata* and *T. prolixa*. *Trichoteleia bidentata* may be separated from *T. prolixa* by the coarsely sculptured, relatively narrow gena and the less extreme length of the metasoma.

Etymology. The adjectival epithet *bidentata* refers to the number of mandibular teeth in this species.

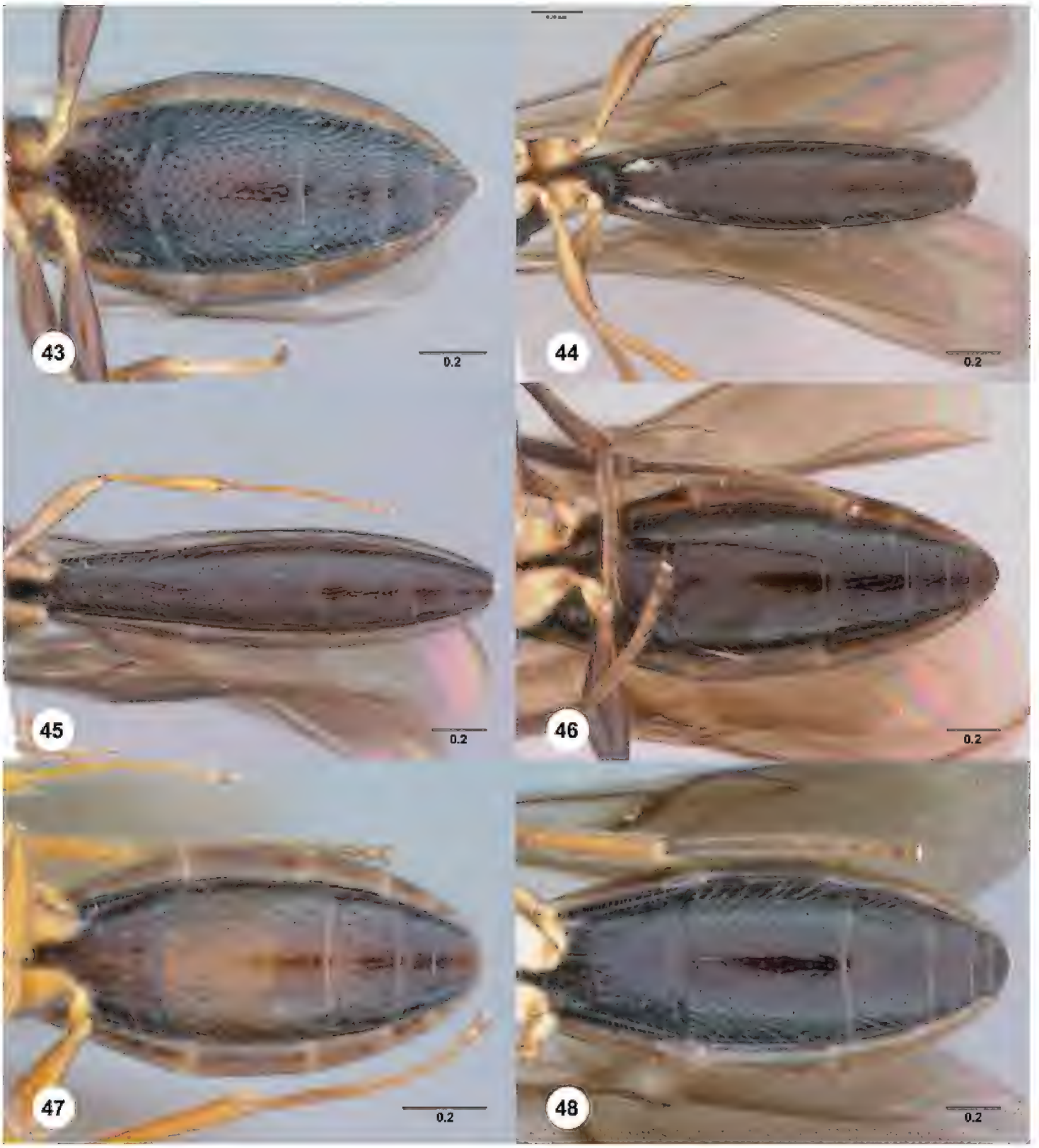
Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=241275]

Material Examined. Holotype, female: **MADAGASCAR:** Toliara Auto. Prov., 19.8km (84°) E Sakaraha, leaf mold / rotten wood / tropical dry forest, BLF7510, Zombitse-Vohibasia National Park, 22°50'36"S 44°42'36"E, 770m, 5.II–9.II.2003, sifted litter, Fisher, Griswold et al., CASENT 2136543 (deposited in CASC). Paratype: **MADAGASCAR:** 1 male, CASENT 2132802 (CASC).

Trichoteleia carinata Talamas & Johnson, sp. n.

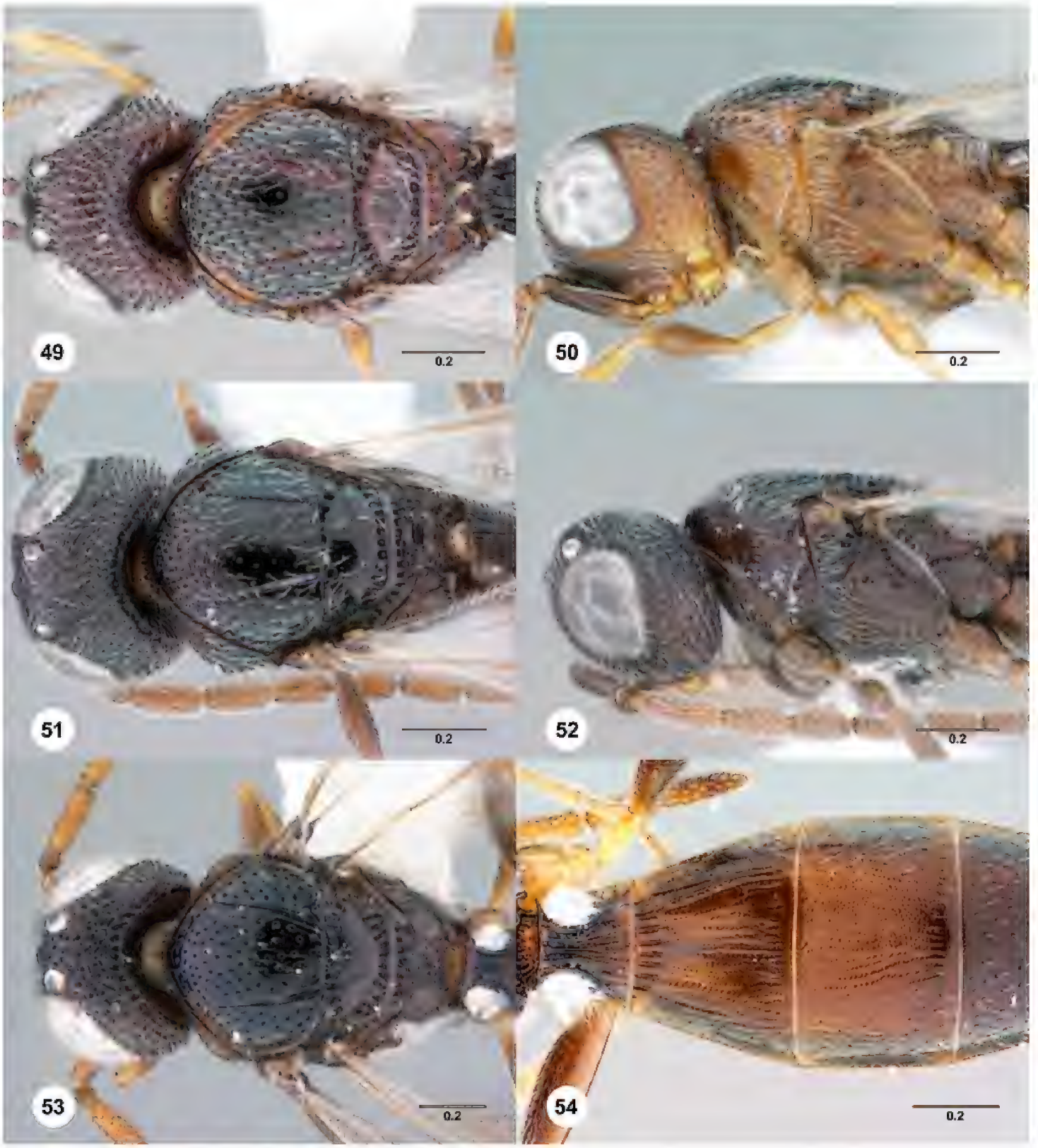
urn:lsid:zoobank.org:act:D153451D-A119-4583-A406-5DFFF0FF9EFF
urn:lsid.biosci.ohio-state.edu:osuc_concepts:249011
Figures 45, 79–84; Morphbank[11]

Description. Male body length: 3.35–4.05 mm (n=2). Color of head: dark brown to black. Central keel of frons: present, extending onto interantennal process; present,



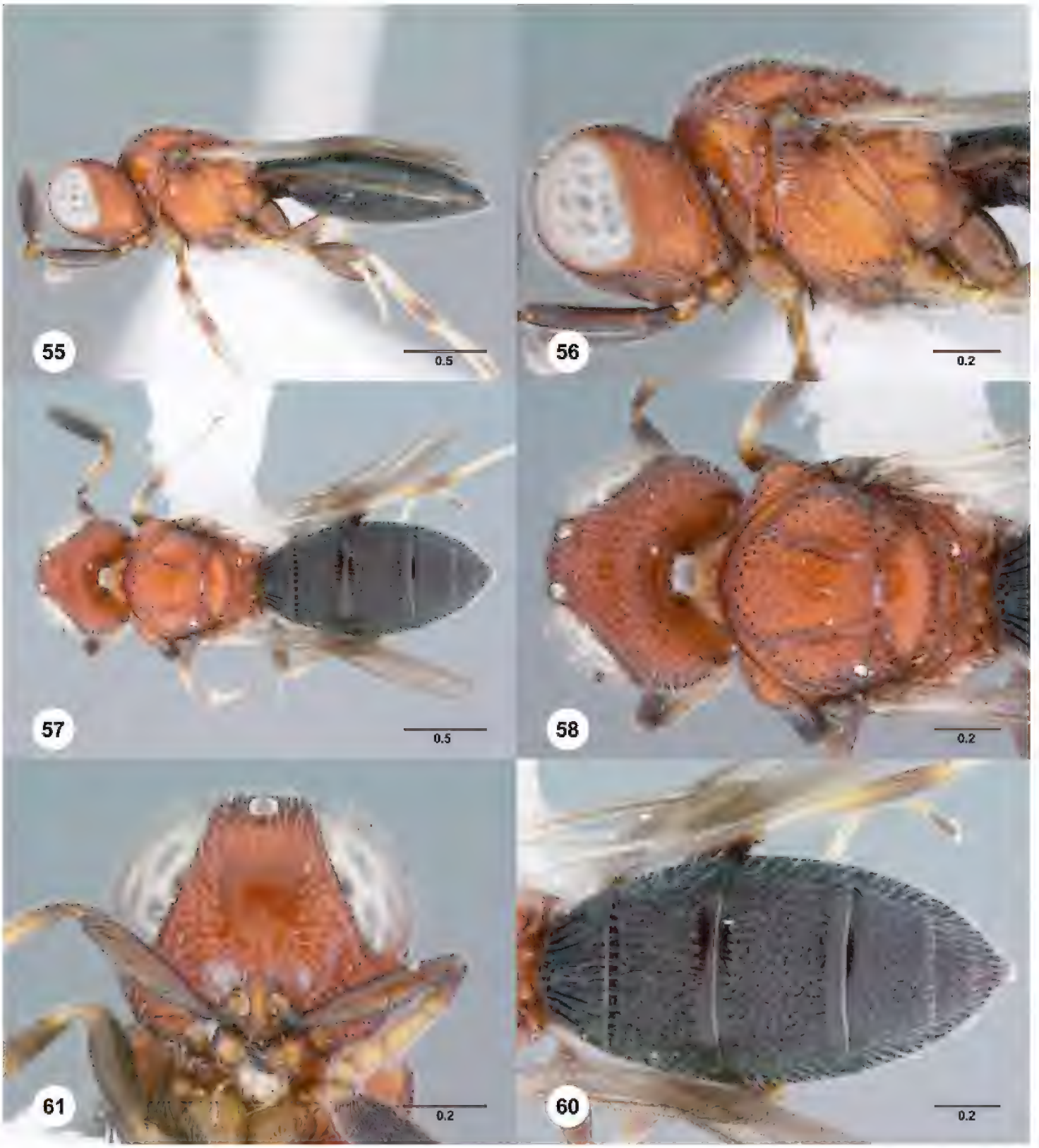
Figures 43–48.[75] **43** *Trichoteleia afo* sp. n., Metasoma, ventral view, female (CASENT 2042915) **44** *Trichoteleia hemlyae* sp. n., Metasoma, ventral view, female (CASENT 2135808) **45** *Trichoteleia carinata* sp. n., Metasoma, ventral view, male (OSUC 181062) **46** *Trichoteleia takariva* sp. n., Metasoma, ventral view, male holotype (CASENT 2043217) **47** *Trichoteleia janus* sp. n., Metasoma, ventral view, male (CASENT 2043789) **48** *Trichoteleia orona* sp. n., Metasoma, ventral view, male (CASENT 2134153). Scale bars in millimeters.

bifurcating ventrally around interantennal process. Sculpture of medial frons in male: smooth. Number of mandibular teeth: three. Basal node on mandible: absent. Sculpture of frons below median ocellus: moderately punctate throughout. Sculpture of posterior vertex: moderately punctate. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: punctate rugose; dorsoventrally strigose.



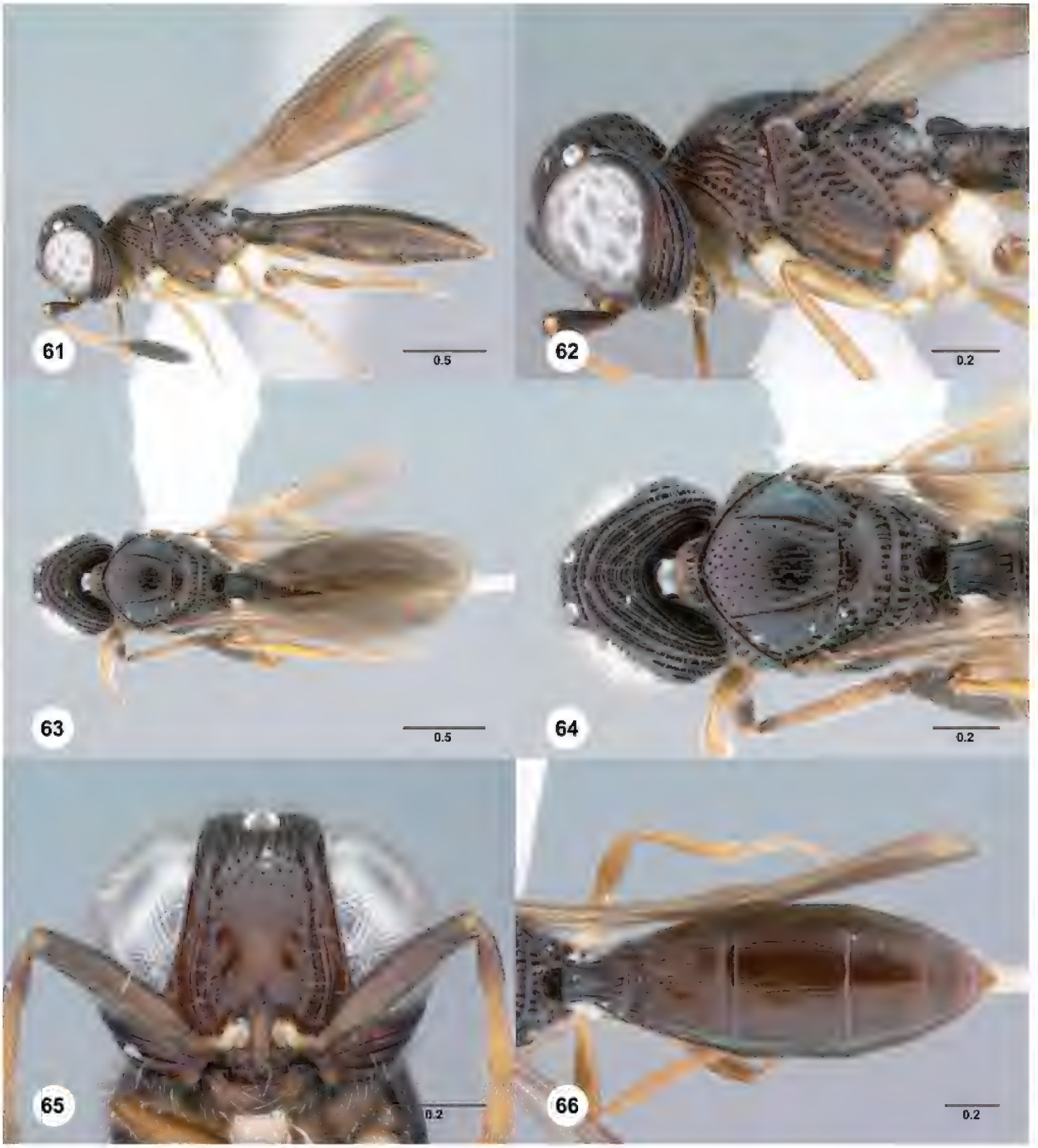
Figures 49–54.[76] **49** *Trichoteleia jiro* sp. n., Head and mesosoma, dorsal view, male (OSUC 143329) **50** *Trichoteleia jiro* sp. n., Head and mesosoma, lateral view, male (OSUC 143329) **51** *Trichoteleia bicolor* sp. n., Head and mesosoma, dorsal view, male (CASENT 2135801) **52** *Trichoteleia bicolor* sp. n., Head and mesosoma, lateral view, male (CASENT 2135801) **53** *Trichoteleia tigris* sp. n., Head and mesosoma, dorsal view, male (CASENT 2135969) **54** *Trichoteleia tigris* sp. n., Metasoma, dorsal view, male (CASENT 2135966). Scale bars in millimeters.

Color of mesosoma in male: dark brown to black. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow; smooth furrow incomplete, reaching suprahumeral sulcus as row of punctures. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth with sparse fine



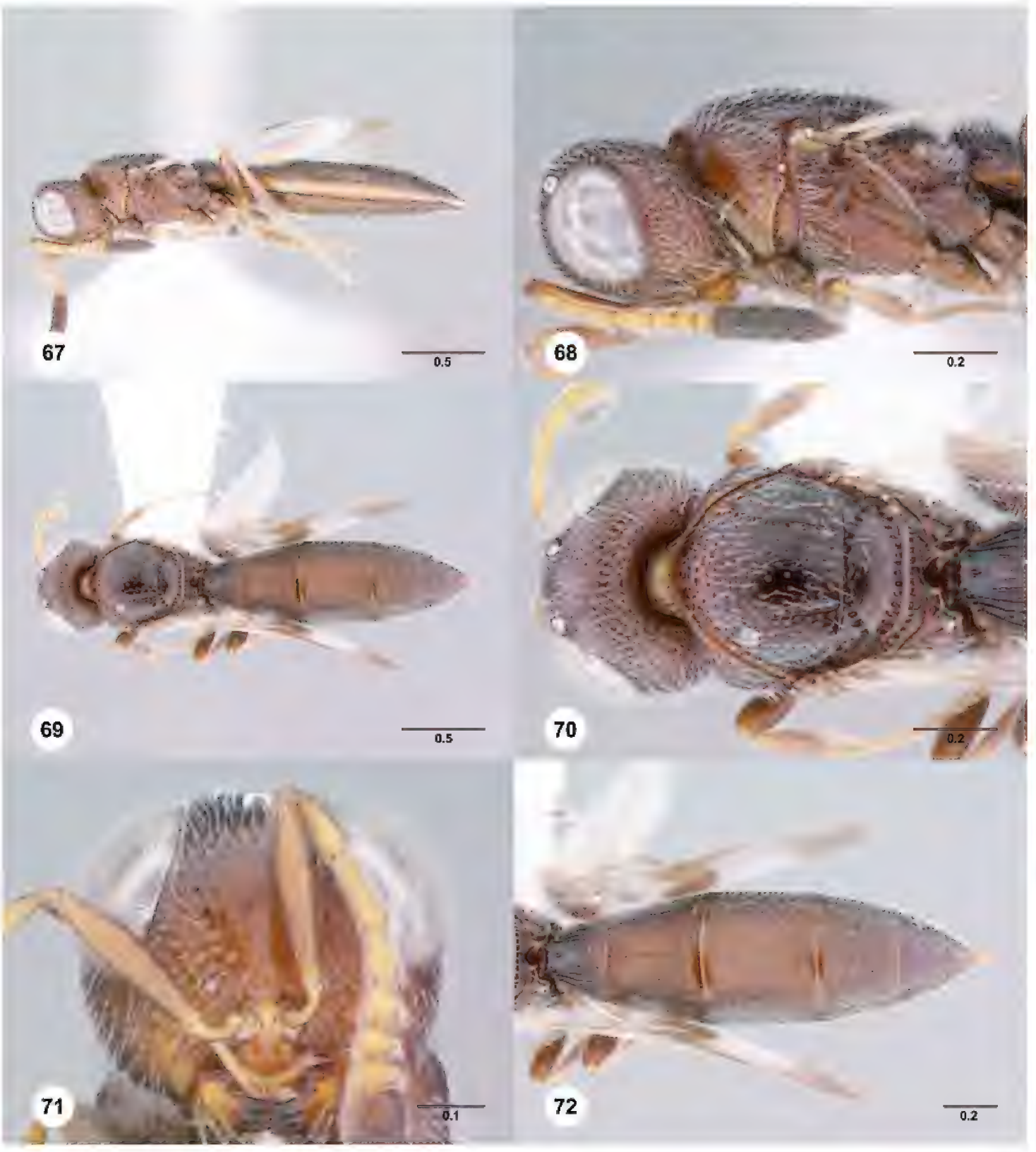
Figures 55–60.[77] *Trichoteleia afo* sp. n. **55** Lateral habitus, female (OSUC 143344) **56** Head and mesosoma, lateral view, female (OSUC 143344) **57** Dorsal habitus, female (CASENT 2042728) **58** Head and mesosoma, dorsal view, female (CASENT 2042728) **59** Head, anterior view, female (CASENT 2042728) **60** Metasoma, dorsal view, female (CASENT 2042728). Scale bars in millimeters.

punctures throughout. Postacetabular sulcus: comprised of small cells. Mesopleural carina: absent. Sculpture along ventral half of prespecular sulcus: punctate. Sculpture of posterolateral mesepisternum: punctate. Sculpture of ventral surface of mesepisternum: finely punctate. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex. Color of legs: fore and mid legs yellow to pale brown, hind legs dark brown.



Figures 61–66.[78] *Trichoteleia albidipes* Kieffer. **61** Lateral habitus, female (CASENT 2132453) **62** Head and mesosoma, lateral view, female (CASENT 2132453) **63** Dorsal habitus, female (CASENT 2132457) **64** Head and mesosoma, dorsal view, female (CASENT 2132457) **65** Head, anterior view, female (CASENT 2132453) **66** Metasoma, dorsal view, female (CASENT 2132456). Scale bars in millimeters.

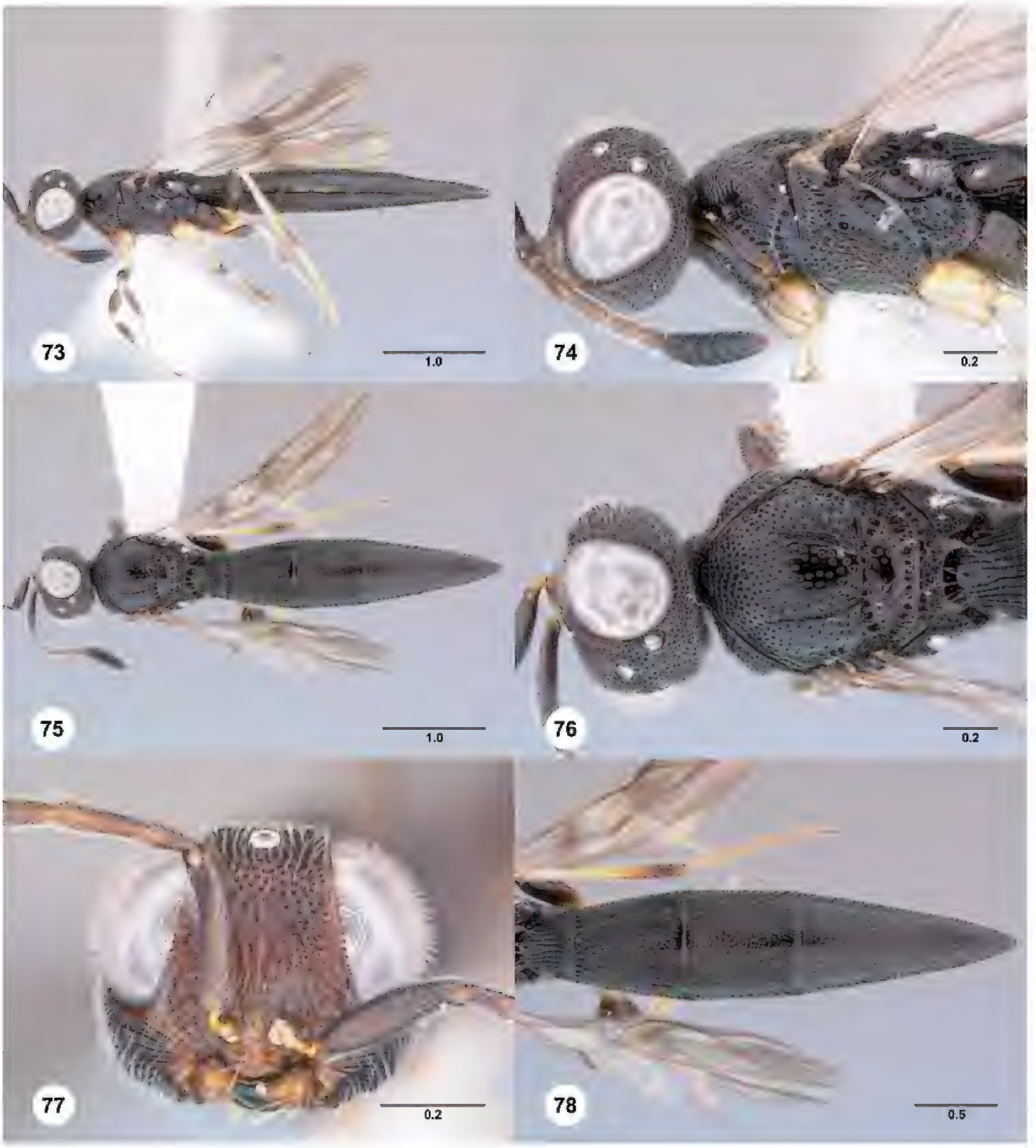
Color of metasoma in male: dark brown to black throughout. Posterior margin of transverse sulcus on T2: straight. Sublateral tergal carina on T2: present. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: absent. Macrosculpture of T2 in male: longitudinally striate throughout. Macrosculpture of medial T3 in male: longitudinally strigose. Macrosculpture of lateral T3 in male: longitudinally strigose. Macrosculpture of T4 in male: absent. Punctation of T4 in male: sparse in medial third, moderately dense laterally. Macrosculpture of T5 in male:



Figures 67–72.[79] *Trichoteleia bicolor* sp. n., female holotype (CASENT 2135889). **67** Lateral habitus **68** Head and mesosoma, lateral view **69** Dorsal habitus **70** Head and mesosoma, dorsal view **71** Head, anterior view **72** Metasoma, dorsal view. Scale bars in millimeters.

absent. Punctation of T5 in male: dense throughout; sparse in medial third, dense laterally. Sculpture of S2: densely punctate, punctures of moderate size. Prominent longitudinal median carina on S2: present.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in male: slightly infuscate throughout. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

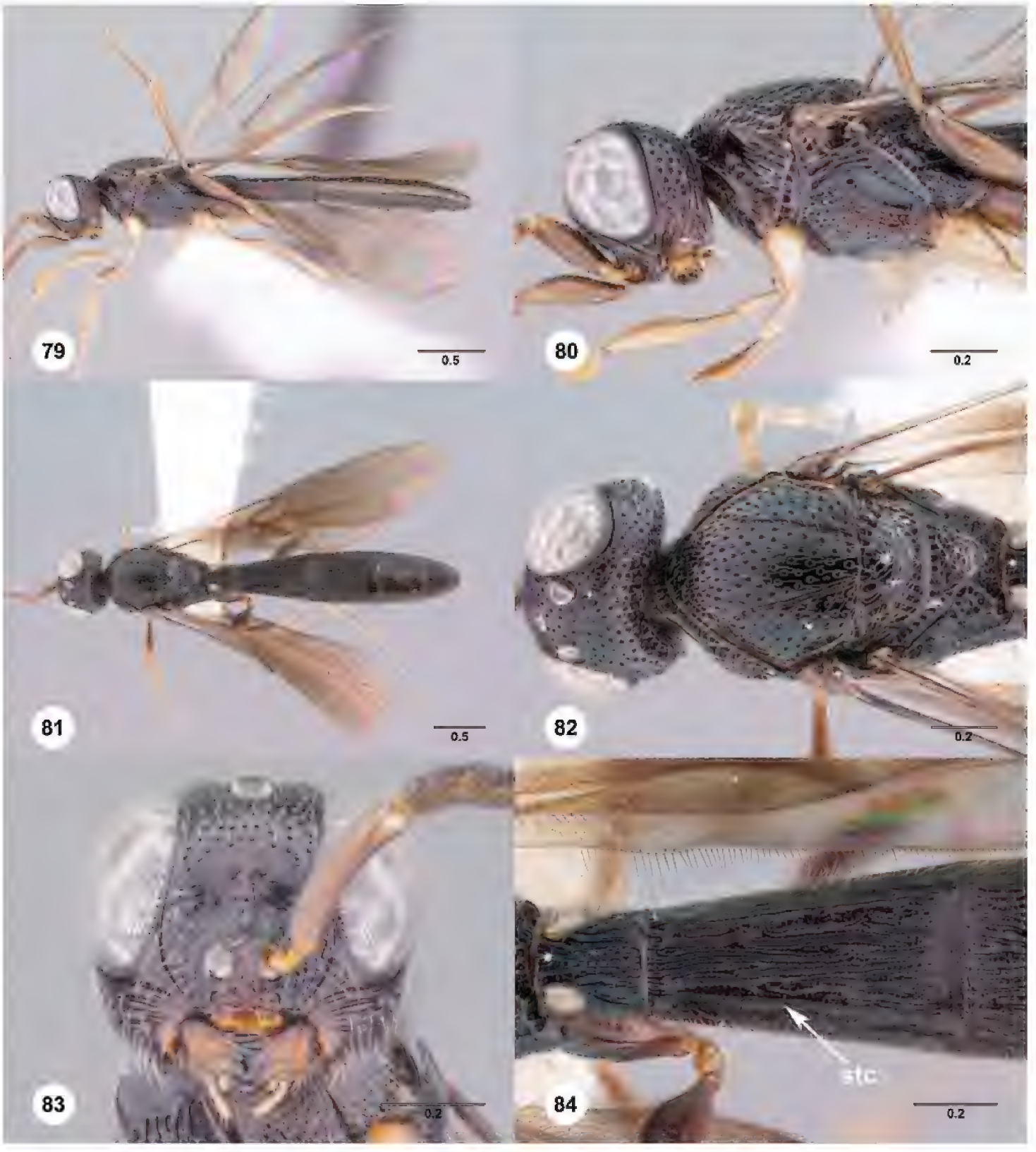


Figures 73–78.[80] *Trichoteleia bidentata* sp. n., female holotype (CASENT 2136543). **73** Lateral habitus **74** Head and mesosoma, lateral view **75** Dorsal habitus **76** Head and mesosoma, dorsal view **77** Head, anterior view **78** Metasoma, dorsal view. Scale bars in millimeters.

Diagnosis. *Trichoteleia carinata* has a distinctly elongate metasoma similar to *T. longiventris,* and it has a longitudinal median carina on S2, as does *T. quazii* (Fig. 45). It can be separated from both of these species by the presence of a prominent longitudinal carina on the lateral part of T2 (Fig. 84).

Etymology. This species is named for the diagnostic carinae on lateral T2 and medial S2. The epithet is an adjective.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=249011]



Figures 79–84.[81] *Trichoteleia carinata* sp. n. **79** Lateral habitus, male (OSUC 181062) **80** Head and mesosoma, lateral view, male (OSUC 181062) **81** Dorsal habitus, male holotype (OSUC 181015) **82** Head and mesosoma, dorsal view, male holotype (OSUC 181015) **83** Head, anterior view, male holotype (OSUC 181015) **84** Metasoma, dorsal view, male holotype (OSUC 181015). Scale bars in millimeters.

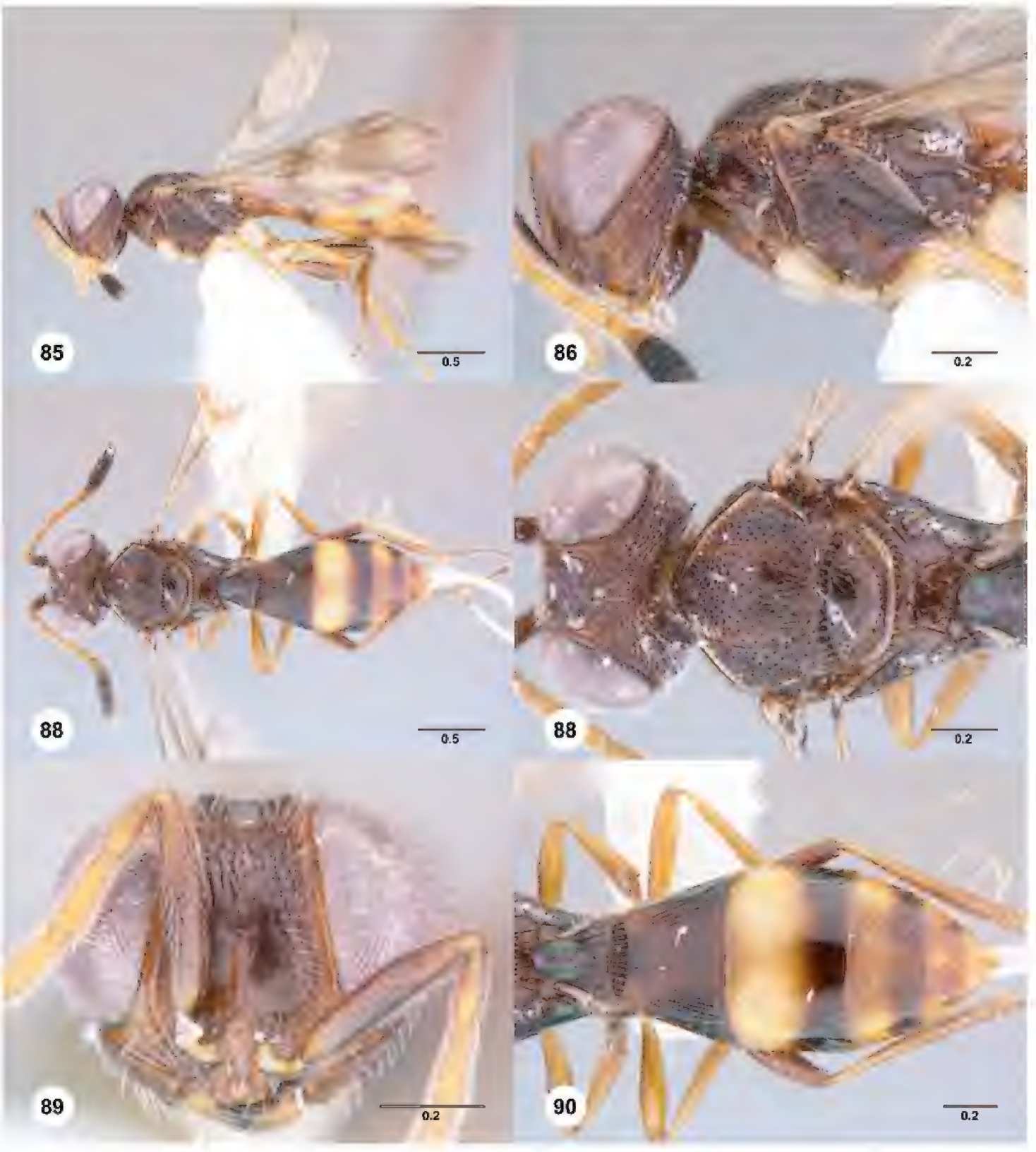
Material Examined. Holotype, male: **MADAGASCAR:** Fianarantsoa Auto. Prov., Ranomafana National Park, 21°15'05"S 47°24'43"E, 1190m, 21.I–31.I.2002, malaise trap, R. Harin'Hala & M. Irwin, OSUC 181015 (deposited in CASC). Other material: **MADAGASCAR:** 1 male, OSUC 181062 (CNCI).

***Trichoteleia cincta* Talamas and Masner, sp. n.**
urn:lsid:zoobank.org:act:EBCA57A2-BFB9-438D-B524-9BF79B608A05
urn:lsid:biosci.ohio-state.edu:osuc_concepts:238230
Figures 85–90; Morphbank[12]

Description. Female body length: 2.93–3.01 mm (n=4). Color of head: reddish brown; yellow throughout. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: dorsoventrally strigose throughout. Sculpture of posterior vertex: rugulose with faint concentric tendency. Occipital rim: comprised of small to miniscule cells. Sculpture of gena: irregularly rugulose; dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: reddish brown throughout; yellow throughout. Sculpture along posterior pronotal sulcus: striate, striae well defined; striate, striae short and poorly defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: longitudinally rugulose posteriorly, transversely rugulose anteriorly; moderately punctate in posterior half, becoming denser and transversely rugulose anteriorly. Sculpture of mesoscutellum: smooth medially, coarsely punctate laterally; smooth medially, densely and finely punctate laterally. Postacetabular sulcus: present as a smooth furrow. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: punctate rugose. Sculpture of posterolateral mesepisternum: smooth. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: rugulose; punctate rugose. Posterior margin of metapleuron below propodeal spiracle: with blunt kink near intersection with metapleural sulcus. Color of legs: yellow throughout; coxae and trochanters yellow, otherwise brown, becoming paler distally.

Color of metasoma in female: yellow; variably patterned in alternating orange and brown. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: absent. Microsculpture on T3: absent. Microsculpture on T4: absent. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally striate throughout. Macrosculpture of medial T3 in female: weakly longitudinally striate; absent. Macrosculpture of lateral T3 in female: longitudinally striate. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: obliquely strigose; rugulose. Punctation of T4 in female: absent along midline, otherwise moderately dense. Macrosculpture of T5 in female: longitudinally strigose laterally; weakly rugulose laterally. Punctation of T5 in female: absent along midline, otherwise moderately dense. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6



Figures 85–90.[82] *Trichoteleia cincta* sp. n. **85** Lateral habitus, female holotype (OSUC 181007) **86** Head and mesosoma, lateral view, female holotype (OSUC 181007) **87** Dorsal habitus, female (OSUC 181006) **88** Head and mesosoma, dorsal view, female (OSUC 181006) **89** Head, anterior view, female holotype (OSUC 81007) **90** Metasoma, dorsal view, female (OSUC 181006). Scale bars in millimeters.

in female: smooth with fine setigerous punctures along lateral margin. Sculpture of S2: longitudinally striate anteromedially, otherwise smooth. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: infuscate apical to R with white spot near apex of wing. Color of hind wing: hyaline with faint infuscate patches posterior to R and along anterior margin apical to R. Density of setation in fore wing: uniform throughout. Density

of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. This species shares the color pattern of the wings with *T. delilah*, *T. picturata*, and *T. zuparkoi*. It may be separated from *T. delilah* by the lack of a basiconic sensillum on A7, and from *T. picturata* and *T. zuparkoi* by the dorsoventrally strigose sculpture below the median ocellus.

Etymology. The adjectival species epithet refers to color pattern of the metasoma.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=238230]

Material Examined. Holotype, female: **MADAGASCAR:** Antsiranana Auto. Prov., Marojejy National Park, 14°26.2'S 49°44.5'E, 1250m, 25.X–3.XI.1996, malaise trap, E. Quinter, OSUC 181007 (deposited in CASC). Paratypes: **MADAGASCAR:** 4 females, OSUC 181006, 181037–181038 (AMNH); OSUC 266090 (CASC).

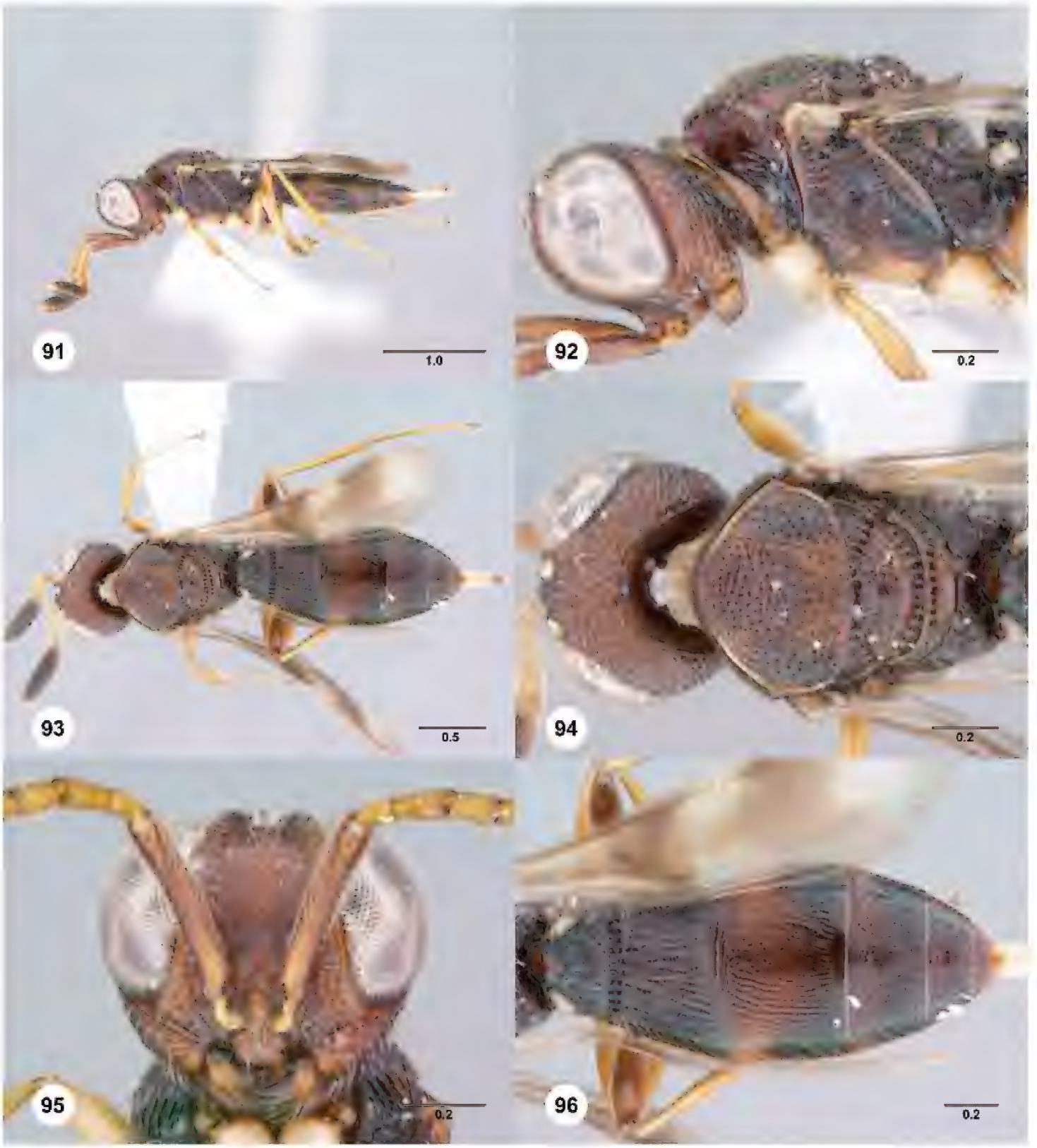
Comments. The sculpture of the medial mesoscutum and the color of the body is extremely variable in *Trichoteleia cincta.* The anterior half of the medial mesoscutum varies from smooth to transversely rugose and the posterior half varies from smooth to longitudinally strigose. The two specimens with more pronounced sculpture have a brown head and mesosoma with a banded metasoma (Fig. 90). Those with smoother sculpture are entirely yellow.

Trichoteleia delilah Talamas, sp. n.

urn:lsid:zoobank.org:act:5E189039-DE79-4CAA-BB72-283863D03D6A
urn:lsid.biosci.ohio-state.edu:osuc_concepts:243413
Figures 1, 17, 91–96; Morphbank[13]

Description. Female body length: 3.21 mm (n=1). Color of head: reddish brown. Central keel of frons: present, bifurcating ventrally around interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: punctate rugulose throughout. Sculpture of posterior vertex: punctate rugulose. Occipital rim: comprised of small to miniscule cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: present.

Color of mesosoma in female: reddish brown throughout. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: longitudinally rugulose posteriorly, transversely rugulose anteriorly. Sculpture of mesoscutellum: smooth medially, coarsely punctate laterally. Postacetabular sulcus: present as a smooth furrow. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: punctate rugose. Sculpture of posterolateral mesepisternum: smooth except for 1 or 2 striae parallel to mesopleural carina. Sculpture of ventral surface of mesepisternum: finely punctate. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle: with blunt kink near intersection with metapleural sulcus. Color of legs: yellow throughout.



Figures 91–96.[83] *Trichoteleia delilah* sp. n., female holotype (CASENT 2135905). **91** Lateral habitus **92** Head and mesosoma, lateral view **93** Dorsal habitus **94** Head and mesosoma, dorsal view **95** Head, anterior view **96** Metasoma, dorsal view. Scale bars in millimeters.

Color of metasoma in female: dark brown to black throughout. Posterior margin of transverse sulcus on T2: weakly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: present. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally striate throughout. Macrosculpture of medial T3 in female: weakly longitudinally strigose. Macrosculpture of lateral T3 in female: longitudinally strigose. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: punctate rugulose. Punctation of T4 in female: absent

along midline, otherwise moderately dense. Macrosculpture of T5 in female: punctate rugulose laterally. Punctation of T5 in female: moderately dense throughout. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth with fine setigerous punctures along lateral margin. Sculpture of S2: longitudinally striate throughout. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: infuscate in apical two-thirds, white spot near apex, two white patches medially at anterior and posterior margins. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: less than 1.5 times as long as rs. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia delilah* is similar to *T. cincta*, *T. picturata* and *T. zuparokoi* in the banded coloration of the wings and to *T. cincta* and *T. picturata* in the sculpture of the medial mesoscutum, which is transversely rugulose anteriorly and longitudinally rugulose posteriorly. It is readily separated from these three species by the presence of a basiconic sensillum on A7 (Fig. 1) and rugulose sculpture in the marginal depression of S3 (Fig. 17).

Etymology. This aesthetically pleasing species is named for the Delilah of the Old Testament. The species epithet is a noun placed in apposition.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=243413]

Material Examined. Holotype, female: **MADAGASCAR:** Antsiranana Auto. Prov., 20.4km (219°) SW Antanambao, leaf mold / rotten wood / rainforest, #1990, Manongarivo Special Reserve, 14°02.8'S 48°24.1'E, 1860m, 3.XI.1998, sifted litter, B. L. Fisher, Griswold et al., CASENT 2135905 (deposited in CASC).

***Trichoteleia eburata* Talamas, sp. n.**
urn:lsid:zoobank.org:act:81B73727-DDE9-41C2-853A-1E31B9C285A4
urn:lsid:biosci.ohio-state.edu:osuc_concepts:264100
Figures 97–101; Morphbank[14]

Description. Color of head: yellow throughout. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: absent. Sculpture of frons below median ocellus: densely punctate throughout. Sculpture of posterior vertex: moderately punctate. Occipital rim: comprised of small to miniscule cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: yellow with longitudinal, median brown stripe dorsally. Sculpture along posterior pronotal sulcus: striate, striae short and poorly defined. Notaulus: smooth furrow incomplete, reaching suprahumeral sulcus as row of punctures. Sculpture of medial mesoscutum: sparsely punctate, becoming denser anteriorly. Sculpture of mesoscutellum: smooth medially, sparsely punctate laterally. Mesopleural

Figures 97–101.[84] *Trichoteleia eburata* sp. n., female holotype (CASENT 2043861). **97** Lateral habitus **98** Head and mesosoma, lateral view **99** Head, anterolateral view **100** Head and mesosoma, dorsal view **101** Metasoma, dorsal view. Scale bars in millimeters.

carina: present. Sculpture along ventral half of prespecular sulcus: punctate. Sculpture of posterolateral mesepisternum: punctate. Setation of ventral metapleural area: absent. Setation of metapleural triangle: moderately dense. Sculpture of metapleural triangle: densely punctate. Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex. Color of legs: coxae and trochanters white, otherwise yellow to pale brown.

Color of metasoma in female: T1–T2 and S1–S2 dark brown, T3 and S3 white, T4–T6 and S4–S6 light brown. Posterior margin of transverse sulcus on T2: strongly

convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: absent. Microsculpture on T3: absent. Microsculpture on T4: absent. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally strigose throughout. Macrosculpture of medial T3 in female: absent. Macrosculpture of lateral T3 in female: absent. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: absent. Punctation of T4 in female: sparse in medial third, moderately dense laterally. Macrosculpture of T5 in female: absent. Punctation of T5 in female: sparse along midline, otherwise dense. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth along midline, densely and finely punctate laterally. Sculpture of S2: crenulate along anterior margin, otherwise smooth with small punctures throughout. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: slightly infuscate throughout. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia eburata* is most similar to *T. hemlyae*, *T. ravaka* and *T. pauliani*. The absence of microsculpture on the metasoma of *T. eburata* differentiates it.

Etymology. The adjectival epithet *eburata*, meaning "inlaid with ivory" in Latin, refers to the pale color of T3 and S3 on the metasoma of this species.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=264100]

Material Examined. Holotype, female: **MAYOTTE:** litter / rainforest, BLF19060, Dapani, 12°57'46"S 45°09'01"E, 135m, 2.XII–4.XII.2007, sifted litter, B. L. Fisher et al., CASENT 2043861 (deposited in CASC).

***Trichoteleia echinata* Talamas, sp. n.**
urn:lsid:zoobank.org:act:0CD0973C-4446-4698-BE73-DB6181470070
urn:lsid:biosci.ohio-state.edu:osuc_concepts:253616
Figures 102–107; Morphbank[15]

Description. Color of head: yellow, becoming darker dorsally. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: finely punctate throughout, dorsoventrally strigose laterally. Sculpture of posterior vertex: rugulose with faint concentric tendency. Occipital rim: comprised of small to miniscule cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: variably yellow to brown. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: longitudinally rugulose posteriorly, transversely rugulose anteriorly. Sculpture of mesoscutellum: smooth medially, sparsely punctate laterally. Postacetabular sulcus: present as a smooth

Figures 102–107.[85] *Trichoteleia echinata* sp. n., female holotype (CASENT 2040887). **102** Lateral habitus **103** Head and mesosoma, lateral view **104** Head, anterior view **105** Head and mesosoma, dorsal view **106** Metasoma, dorsal view **107** T4–T6, dorsal view. Scale bars in millimeters.

furrow. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: weakly rugulose. Sculpture of posterolateral mesepisternum: smooth. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: rugulose. Posterior margin of metapleuron below propodeal spiracle: with blunt kink near intersection with metapleural sulcus. Color of legs: yellow throughout.

Color of metasoma in female: variably patterned in alternating orange and brown. Posterior margin of transverse sulcus on T2: weakly convex. Sublateral tergal carina on

T2: absent. Microsculpture on T2: absent. Microsculpture on T3: absent. Microsculpture on T4: absent. Horn on T1 in female: present as a large protuberance, curved posteriorly at apex. Macrosculpture of medial T3 in female: absent. Macrosculpture of lateral T3 in female: longitudinally striate. Macrosculpture of medial T4 in female: transversely strigose anteriorly, smooth posteriorly. Macrosculpture of lateral T4 in female: obliquely strigose. Punctation of T4 in female: sparse throughout. Macrosculpture of T5 in female: obliquely strigose laterally. Punctation of T5 in female: sparse throughout. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth with fine setigerous punctures along lateral margin. Sculpture of S2: longitudinally striate anteriorly, smooth posteriorly. Prominent longitudinal median carina on S2: absent.

Wings: brachypterous, apex of forewing ending before midpoint of T3. Color of forewing in female: infuscate throughout. Color of hind wing: infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r.

Diagnosis. *Trichoteleia echinata* is most easily separated from the other brachypterous species, *T. parvipennis* and *T. halterata*, by the apically pointed horn on T1.

Etymology. *Trichoteleia echinata* is named for the large metascutellar spines and pointed apex of the horn on T1. The epithet is used as an adjective.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=253616]

Material Examined. Holotype, female: **MADAGASCAR:** Toamasina Auto. Prov., Ambanizana River, montane rainforest, BLF8649, Masoala National Park, 15°34'18"S 50°00'22"E, 800–897m, 26.II–2.III.2003, pitfall trap, D. Andriamalala & D. Silva, CASENT 2040887 (deposited in CASC).

***Trichoteleia fisheri* Talamas & Masner, sp. n.**
urn:lsid:zoobank.org:act:833E1B15-2374-4DC4-81D5-CAFD62AF6309
urn:lsid.biosci.ohio-state.edu:osuc_concepts:238231
Figures 108–113; Morphbank[16]

Description. Female body length: 2.81 mm (n=1). Color of head: yellow throughout. Central keel of frons: present, ending above interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: punctate rugulose throughout. Sculpture of posterior vertex: rugulose with faint concentric tendency. Occipital rim: comprised of small to miniscule cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: variably yellow to brown. Sculpture along posterior pronotal sulcus: rugulose. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: longitudinally rugulose posteriorly, transversely rugulose anteriorly. Sculpture of mesoscutellum: smooth medially, moderately punctate laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: punctate rugose.

Figures 108–113.[86] *Trichoteleia fisheri* sp. n., female holotype (OSUC 181008). **108** Lateral habitus **109** Head and mesosoma, lateral view **110** Dorsal habitus **111** Mesosoma, dorsal view **112** Head, anterior view **113** Metasoma, dorsal view. Scale bars in millimeters.

Sculpture of posterolateral mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: rugulose. Posterior margin of metapleuron below propodeal spiracle: with blunt kink near intersection with metapleural sulcus. Color of legs: yellow throughout.

Color of metasoma in female: horn on T1 brown, otherwise yellow. Posterior margin of transverse sulcus on T2: weakly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: present. Horn on T1 in female: present as a large protuberance, curved posteriorly

at apex. Macrosculpture of T2 in female: longitudinally strigose medially, reticulate rugose laterally. Macrosculpture of medial T3 in female: rugulose. Macrosculpture of lateral T3 in female: longitudinally strigose. Macrosculpture of medial T4 in female: obliquely strigose. Macrosculpture of lateral T4 in female: obliquely strigose. Punctation of T4 in female: sparse in medial third, moderately dense laterally. Macrosculpture of T5 in female: absent along midline, otherwise obliquely strigose throughout. Punctation of T5 in female: moderately dense throughout. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth with fine setigerous punctures along lateral margin. Sculpture of S2: longitudinally striate throughout. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: slightly infuscate throughout. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: less than 1.5 times as long as rs. M+Cu and RS+M in forewing: nebulous.

Diagnosis. The female of this species bears a posteriorly curving horn on T1, forming a stout hook in lateral view (Fig. 108–109). This character is shared only with *T. echinata* among known species of *Trichoteleia*.

Etymology. This species is named in honor of Brian Fisher of the California Academy of Sciences for organizing and conducting extensive insect collection in Madagascar. Most of the species treated in this revision would not be available for study without the efforts of Dr. Fisher and his colleagues.

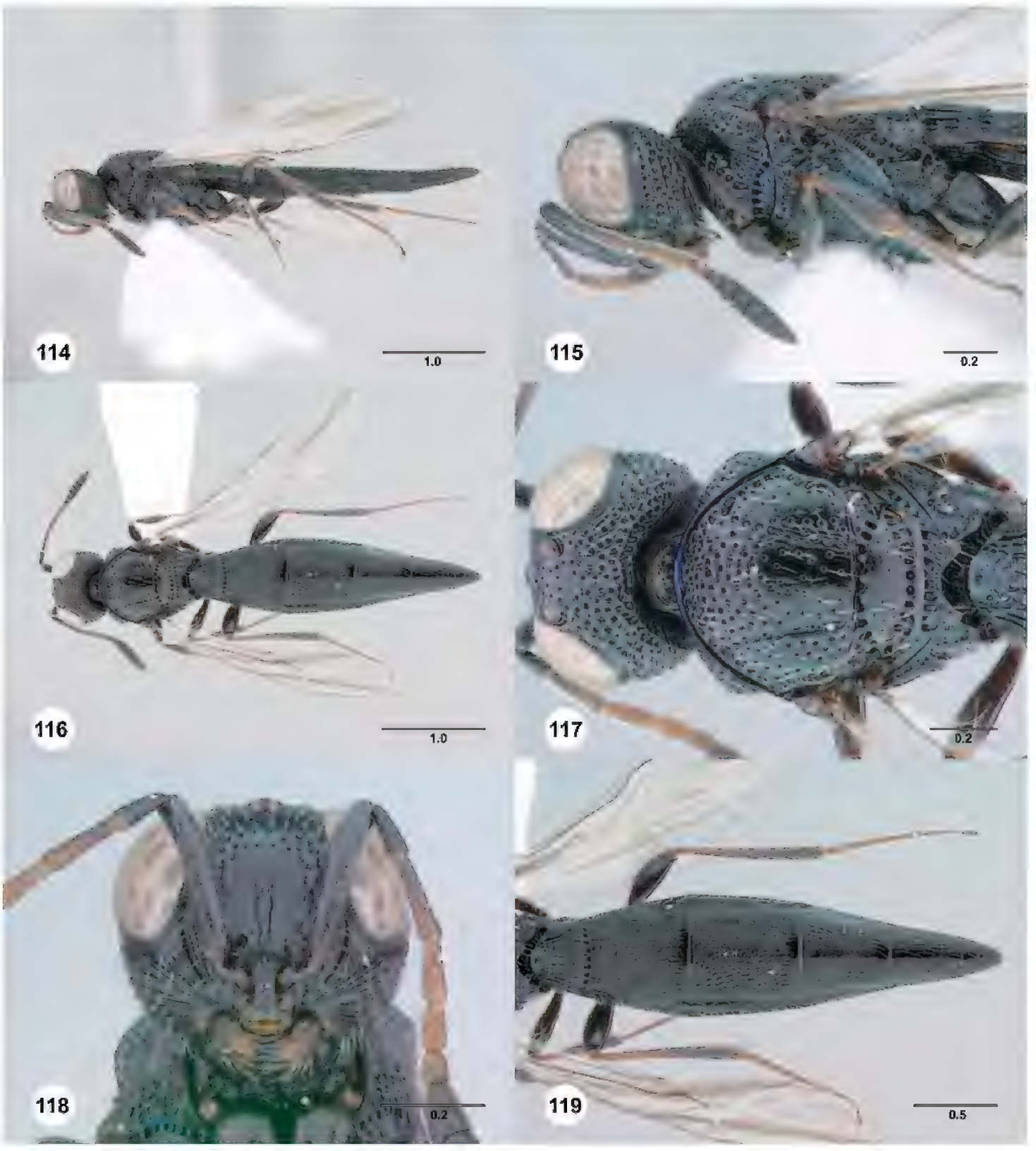
Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=238231]

Material Examined. Holotype, female: **MADAGASCAR:** Antsiranana Auto. Prov., #1938, Manongarivo Special Reserve, 13°59.9'S 48°25.7'E, 1175m, 20.X.1998, B. L. Fisher, OSUC 181008 (deposited in CASC).

***Trichoteleia funesta* Talamas, sp. n.**
urn:lsid:zoobank.org:act:8AA5288C-4A85-404A-B578-64D5C27E0766
urn:lsid:biosci.ohio-state.edu:osuc_concepts:253565
Figures 114–119; Morphbank[17]

Description. Color of head: black throughout. Central keel of frons: present, bifurcating ventrally around interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: punctate rugulose laterally, smooth medially. Sculpture of posterior vertex: punctate rugose. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: punctate rugose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: dark brown to black. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: smooth furrow incomplete, reaching suprahumeral sulcus as row of punctures. Sculpture of medial mesoscutum:



Figures 114–119.[119] *Trichoteleia funesta* sp. n., female holotype (OSUC 254608). **114** Lateral habitus **115** Head and mesosoma, lateral view **116** Dorsal habitus **117** Head and mesosoma, dorsal view **118** Head, anterior view **119** Metasoma, dorsal view. Scale bars in millimeters

smooth and sparsely punctate posteriorly, densely punctate and transverely rugulose anteriorly. Sculpture of mesoscutellum: smooth with few very fine punctures laterally. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: coarsely punctate. Sculpture of posterolateral mesepisternum: coarsely punctate. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex. Color of legs: brown throughout.

Color of metasoma in female: black. Posterior margin of transverse sulcus on T2: weakly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: present. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally strigose throughout. Macrosculpture of medial T3 in female: weakly longitudinally strigose. Macrosculpture of lateral T3 in female: longitudinally strigose. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: longitudinally strigose. Punctation of T4 in female: sparse in medial third, moderately dense laterally. Macrosculpture of T5 in female: longitudinally strigose laterally. Punctation of T5 in female: moderately dense throughout. Shape of T5 in female: width of posterior margin less than length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth with sparse fine setigerous punctures throughout. Sculpture of S2: coarsely punctate throughout. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: hyaline throughout. Color of hind wing: hyaline throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: spectral.

Diagnosis. *Trichoteleia funesta* is most similar to *T. tezitra* in both habitus and characters. The longitudinal strigae on T4–T5 of *T. funesta* serve to separate *T. funesta*.

Etymology. The adjectival epithet *funesta*, meaning "mournful", refers to the black color of this species.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=253565]

Material Examined. Holotype, female: **MADAGASCAR:** Fianarantsoa Auto. Prov., 35km SSE Antsirabe, Uapacca forest, MA-24-32, Italaviana, 20°10.40'S 47°05.16'E, 1360m, 16.X–26.X.2003, malaise trap, R. Harin'Hala, OSUC 254608 (deposited in CASC).

Trichoteleia halterata Talamas & Masner, sp. n.

urn:lsid:zoobank.org:act:8387E913-6686-4C22-8A4B-43FD20D63096
urn:lsid.biosci.ohio-state.edu:osuc_concepts:238233
Figures 120–125; Morphbank[18]

Description. Female body length: 2.76 mm (n=1). Color of head: yellow, becoming darker dorsally. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: absent. Sculpture of frons below median ocellus: punctate rugulose throughout. Sculpture of posterior vertex: rugulose with faint concentric tendency. Occipital rim: comprised of small to miniscule cells. Sculpture of gena: smooth ventrally, rugulose dorsally. Basiconic sensillum on A7: absent.

Color of mesosoma in female: variably yellow to brown. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: percurrent, reaching supra-

Figures 120–125.[87] *Trichoteleia halterata* sp. n., female holotype (OSUC 181012). **120** Lateral habitus **121** Head and mesosoma, lateral view **122** Dorsal habitus **123** Head and mesosoma, dorsal view **124** Head, anterior view **125** Metasoma, dorsal view. Scale bars in millimeters.

humeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: densely punctate throughout. Sculpture of mesoscutellum: smooth medially, moderately punctate laterally. Postacetabular sulcus: present as a smooth furrow. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: weakly rugulose. Sculpture of posterolateral mesepisternum: smooth except for 1 or 2 striae parallel to mesopleural carina. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: rugulose. Posterior margin of metapleuron below propodeal spiracle: with blunt kink

near intersection with metapleural sulcus. Color of legs: coxae and trochanters yellow, otherwise pale brown, hindlegs the darkest.

Color of metasoma in female: patterned in alternating yellow and pale brown. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: absent. Microsculpture on T3: absent. Microsculpture on T4: absent. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally striate, medial striae not reaching posterior margin. Macrosculpture of medial T3 in female: absent. Macrosculpture of lateral T3 in female: longitudinally strigose. Macrosculpture of medial T4 in female: obliquely strigose. Macrosculpture of lateral T4 in female: obliquely strigose. Punctation of T4 in female: sparse along midline, otherwise dense. Macrosculpture of T5 in female: absent along midline, otherwise obliquely strigose throughout. Punctation of T5 in female: moderately dense throughout. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth with fine setigerous punctures laterally. Sculpture of S2: longitudinally striate anteromedially, otherwise smooth. Prominent longitudinal median carina on S2: absent.

Wings: brachypterous, apex of forewing ending before midpoint of T3. Color of forewing in female: slightly infuscate throughout. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r.

Diagnosis. Among the species of *Trichoteleia* only *T. halterata, T. echinata* and *T. parvipennis* are known to be brachypterous. *Trichoteleia halterata* lacks a basiconic sensillum on A7 and has a simple horn on T1. A basiconic sensillum is present on A7 in *T. parvipennis,* and *T. echinata* has a posterodorsally pointing spine on the horn of T1.

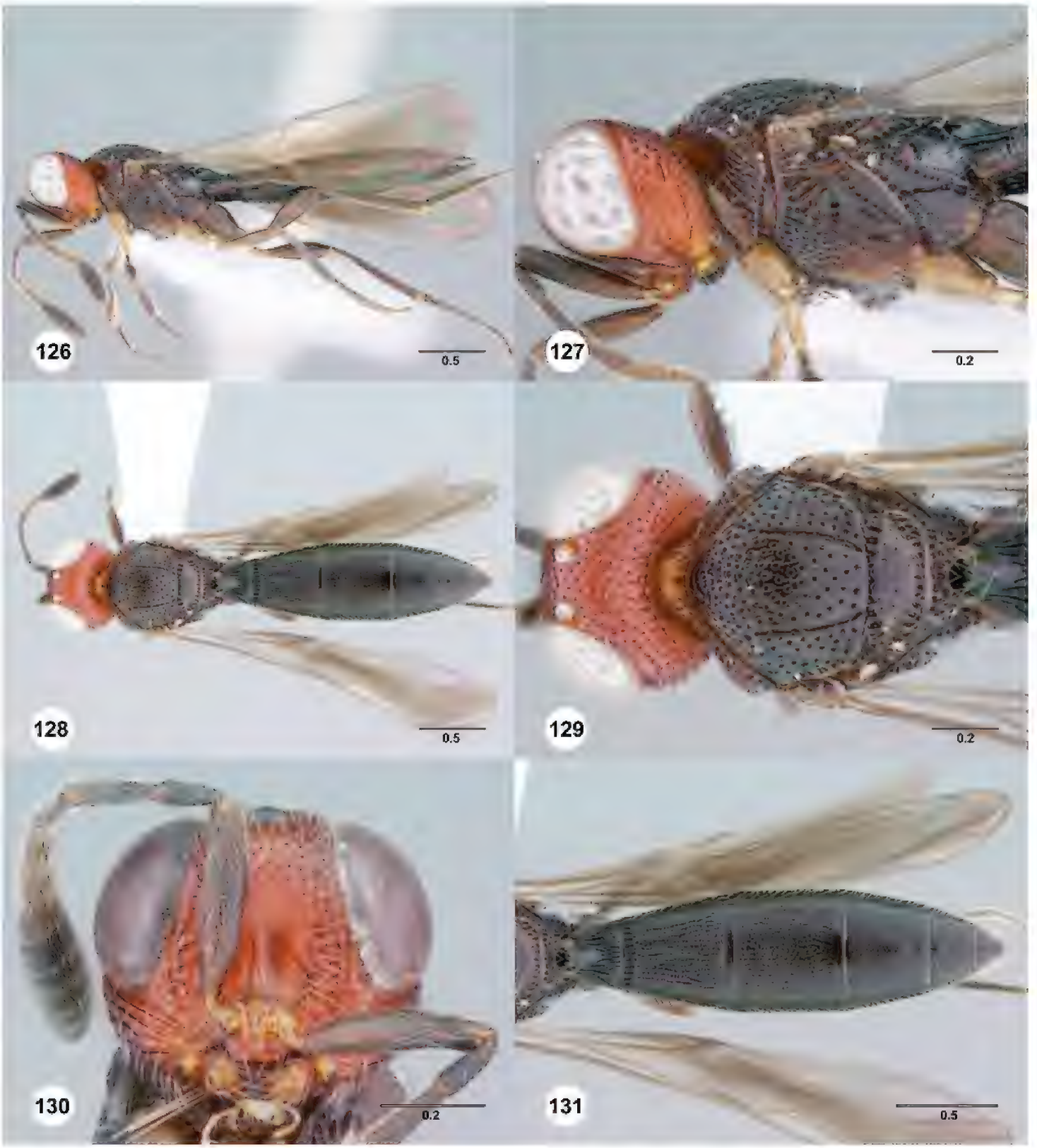
Etymology. The adjectival epithet refers to the vaguely dumbbell shaped forewings.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=238233]

Material Examined. Holotype, female: **MADAGASCAR:** Fianarantsoa Auto. Prov., rainforest, 36km S Ambalavao, 22°12'S 46°58'E, 23.X.1993, Berlese funnel, B. L. Fisher, OSUC 181012 (deposited in CASC).

Trichoteleia hemlyae **Talamas & Masner, sp. n.**
urn:lsid:zoobank.org:act:A8E68218-7683-45D8-A71B-4E0662F53BC9
urn:lsid.biosci.ohio-state.edu:osuc_concepts:241293
Figures 3, 9, 31, 44, 126–131, 309–310; Morphbank[19]

Description. Female body length: 2.66–3.47 mm (n=12). Male body length: 2.24–3.11 mm (n=22). Color of head: dark orange, becoming brown at vertex; orange throughout; dark brown to black; yellow throughout. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Sculpture of medial frons in male: smooth. Number of mandibular teeth: three. Basal



Figures 126–131.[88] *Trichoteleia hemlyae* sp. n. **126** Lateral habitus, female holotype (CASENT 2132833) **127** Head and mesosoma, lateral view, female holotype (CASENT 2132833) **128** Dorsal habitus, female holotype (CASENT 2132833) **129** Head and mesosoma, dorsal view, female holotype (CASENT 2132833) **130** Head, anterior view, female (CASENT 2043942) **131** Metasoma, dorsal view, female holotype (CASENT 2132833). Scale bars in millimeters.

node on mandible: absent. Sculpture of frons below median ocellus: densely punctate throughout. Sculpture of posterior vertex: moderately punctate; densely punctate. Occipital rim: comprised of small to miniscule cells. Sculpture of gena: punctate rugose; dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: dark brown to black; variably orange to brown. Color of mesosoma in male: dark brown to black. Sculpture along posterior pronotal sulcus:

striate, striae well defined. Notaulus: smooth furrow incomplete, reaching suprahumeral sulcus as row of punctures. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser anteriorly; moderately punctate in posterior half, becoming denser and transversely rugulose anteriorly. Sculpture of mesoscutellum: smooth with sparse fine punctures throughout; smooth medially, sparsely punctate laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: punctate. Sculpture of posterolateral mesepisternum: punctate; sparsely punctate. Sculpture of ventral surface of mesepisternum: finely punctate. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse; moderately dense. Sculpture of metapleural triangle: punctate rugose; densely punctate. Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex; with blunt kink near intersection with metapleural sulcus. Color of legs: pale brown throughout; brown throughout; fore coxa and trochanter yellow, otherwise brown.

Color of metasoma in female: dark brown to black throughout. Color of metasoma in male: pale to dark brown throughout. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: present. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: weakly longitudinally striate throughout; striate anteriorly, with few striae reaching T3. Macrosculpture of medial T3 in female: absent; weakly longitudinally strigose. Macrosculpture of lateral T3 in female: absent; longitudinally strigose. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: absent. Punctation of T4 in female: sparse in medial third, moderately dense laterally; absent in medial third, sparse laterally; sparse throughout. Macrosculpture of T5 in female: absent. Punctation of T5 in female: moderately dense throughout; sparse along midline, otherwise dense. Shape of T5 in female: width of posterior margin less than length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth along midline, densely and finely punctate laterally. Macrosculpture of T2 in male: striate anteriorly, with few striae reaching T3; weakly longitudinally striate throughout. Macrosculpture of medial T3 in male: absent. Macrosculpture of lateral T3 in male: absent. Macrosculpture of T4 in male: absent. Punctation of T4 in male: sparse throughout; absent in medial third, sparse laterally. Macrosculpture of T5 in male: absent. Punctation of T5 in male: sparse along midline, otherwise dense throughout; sparse in medial third, moderately dense laterally. Sculpture of S2: longitudinally striate medially, punctate interstitially. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex of forewing extending beyond posterior margin of T3. Color of forewing in female: slightly infuscate with longitudinal dark streak. Color of forewing in male: slightly infuscate throughout; slightly infuscate with longitudinal dark streak. Color of hind wing: slightly infuscate throughout; hyaline with faint infuscate patches posterior to R and along anterior margin apical to R. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia hemlyae* is most similar to *T. pauliani* and *T. ravaka*. The central keel on the frons and coarsely sculptured metapleural triangle will serve to separate this species from *T. pauliani*. The primary difference between *T. hemlyae* and *T. ravaka* is the color pattern in the forewing. *Trichoteleia hemlyae* has forewings that are faintly infuscate throughout with a nebulous darker streak along the longitudinal midline (Figs 31, 126, 128, 131). The forewings of *T. ravaka* have infuscation in patch near the apex of the wing and in a transverse band intersecting R (marginal vein) (Fig. 231).

Etymology. This species is named to honor the work and pleasant demeanor of Sara Hemly (OSU, Columbus), whose meticulous processing of specimens greatly contributed to this revision.

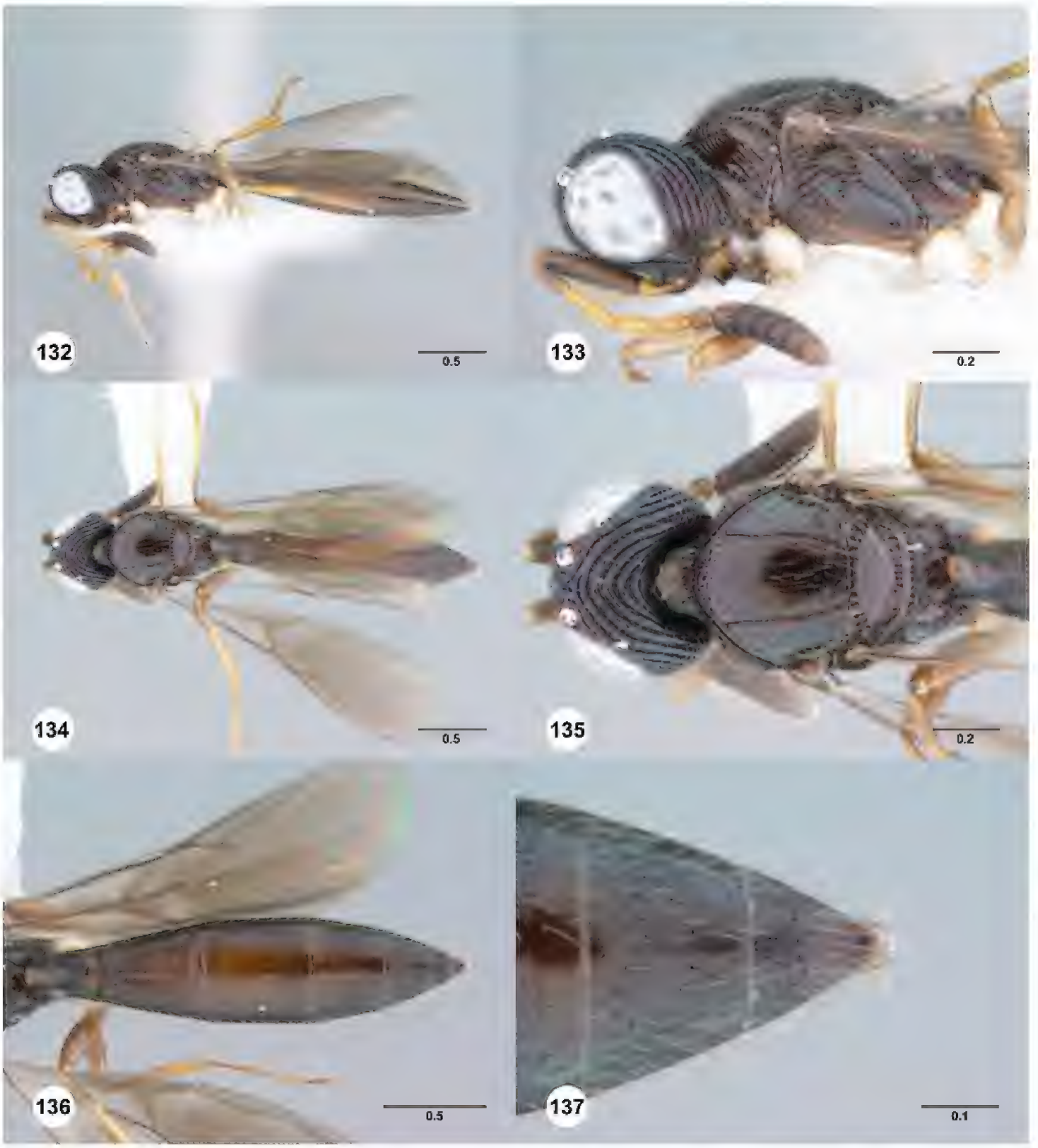
Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=241293]

Material Examined. Holotype, female: **MADAGASCAR:** Fianarantsoa Auto. Prov., radio tower, forest edge / mixed tropical forest, MA-02-09B-54, Ranomafana National Park, 21°15.05'S 47°24.43'E, 1130m, 27.II–9.III.2003, malaise trap, R. Harin'Hala, CASENT 2132833 (deposited in CASC). Paratypes: **MADAGASCAR:** 18 females, 68 males, CASENT 2008625, 2008631, 2042872, 2043435, 2043487–2043488, 2043528, 2043942, 2118406, 2118409, 2118415–2118416, 2118423, 2132655, 2132725–2132726, 2132757, 2132834, 2132843, 2133932–2133933, 2134084–2134085, 2134089–2134090, 2134092, 2134162, 2134174, 2134177, 2134182, 2135732, 2135791, 2135808, 2135828, 2135832, 2135835, 2135841, 2135867–2135868, 2135881, 2135888, 2135891–2135892, 2135894–2135896, 2135899–2135900, 2135959, 2135961–2135962, 2135971, 2136001, 2136017, 2136019, 2136166, 2136179, 2136274, 2138045, 2138092, OSUC 181024, OSUC 181025, OSUC 181026, OSUC 266087 (CASC); CASENT 2043529, OSUC 181027 (CNCI); CASENT 2008627, 2042964–2042965, 2043525, 2118407, 2118414, 2132758, 2134100, 2134163, 2135810, 2135829, 2135846, 2135857, 2135875, 2135893, 2136020, 2136156, 2136158, 2136188, 2136194 (OSUC). Other material: **MADAGASCAR:** 2 females, OSUC 334219–334220 (OSUC).

Trichoteleia irwini Talamas & Masner, sp. n.

urn:lsid:zoobank.org:act:5F1676DB-47EC-422A-9898-F32F84A1AAC7
urn:lsid.biosci.ohio-state.edu:osuc_concepts:238234
Figures 132–137; Morphbank[20]

Description. Female body length: 3.31–3.90 mm (n=2). Male body length: 3.20–3.20 mm (n=2). Color of head: dark brown to black. Central keel of frons: present, ending above interantennal process. Sculpture of medial frons in female: smooth. Sculpture of medial frons in male: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: punctate throughout with a groove parallel to orbital carina; densely punctate throughout. Sculpture of posterior vertex: concentrically rugose. Sculpture of gena: coarsely striate. Basiconic sensillum on A7: present.



Figures 132–137.[89] *Trichoteleia irwini* sp. n., female holotype (CASENT 2134796). **132** Lateral habitus **133** Head and mesosoma, lateral view **134** Dorsal habitus **135** Head and mesosoma, dorsal view **136** Metasoma, dorsal view **137** T5–T6, dorsal view. Scale bars in millimeters.

Color of mesosoma in female: dark brown to black. Color of mesosoma in male: dark brown to black. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth with sparse fine punctures throughout; smooth medially, sparsely punctate laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present; present only in anterior half. Sculpture along ventral half of prespecular sulcus: punctate. Sculpture of posterolateral mesepisternum:

smooth. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: rugulose; finely punctate. Posterior margin of metapleuron below propodeal spiracle: with blunt kink near intersection with metapleural sulcus. Color of legs: coxae and trochanters yellow, otherwise pale brown, hindlegs the darkest.

Color of metasoma in female: dark brown to black throughout. Color of metasoma in male: dark brown to black throughout. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: present. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: striate anteriorly, with few striae reaching T3. Macrosculpture of medial T3 in female: absent. Macrosculpture of lateral T3 in female: present as 1 or 2 strigae along junction of dorsal and lateral surfaces. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: present as 1 or 2 strigae along junction of dorsal and lateral surfaces. Punctation of T4 in female: absent along midline, otherwise sparse. Macrosculpture of T5 in female: weakly rugulose laterally. Punctation of T5 in female: sparse throughout. Shape of T5 in female: width of posterior margin less than length. Microscupture on T6 in female: present throughout. Sculpture of T6 in female: finely punctate throughout. Macrosculpture of T2 in male: striate anteriorly, with few striae reaching T3. Macrosculpture of medial T3 in male: absent. Macrosculpture of lateral T3 in male: present as 1 or 2 strigae along junction of dorsal and lateral surfaces. Macrosculpture of T4 in male: absent. Punctation of T4 in male: sparse throughout; absent in medial third, sparse laterally. Macrosculpture of T5 in male: absent. Punctation of T5 in male: sparsely present throughout. Sculpture of S2: longitudinally striate anteriorly, smooth posteriorly. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: slightly infuscate throughout. Color of forewing in male: slightly infuscate throughout. Color of hind wing: hyaline, slightly infuscate at tip. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia irwini* shares with *T. albidipes* and *T. ketrona* the presence of large concentric rugae on the posterior vertex that are not interrupted by coarse punctures (Figs 64, 135, 153). *Trichoteleia albidipes* has striae that reach from the posterior margin of the lateral pronotum anteriorly to the mesoscutal suprahumeral sulcus (Fig. 62), while the striae of the pronotum in *T. irwini* are clearly separated from the mesoscutal suprahumeral sulcus by a smooth area (Fig. 133). *Trichoteleia irwini* is separated from *T. ketrona* by the presence of dense microsculpture through the metasoma and the weakly striate T2 (Fig. 136). Additionally, females of *T. irwini* have a basiconic sensillum on A7 which is not found in the other two species.

Etymology. *Trichoteleia irwini* is named after Dr. Michael Irwin for his excellent field work in Madagascar.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=238234]

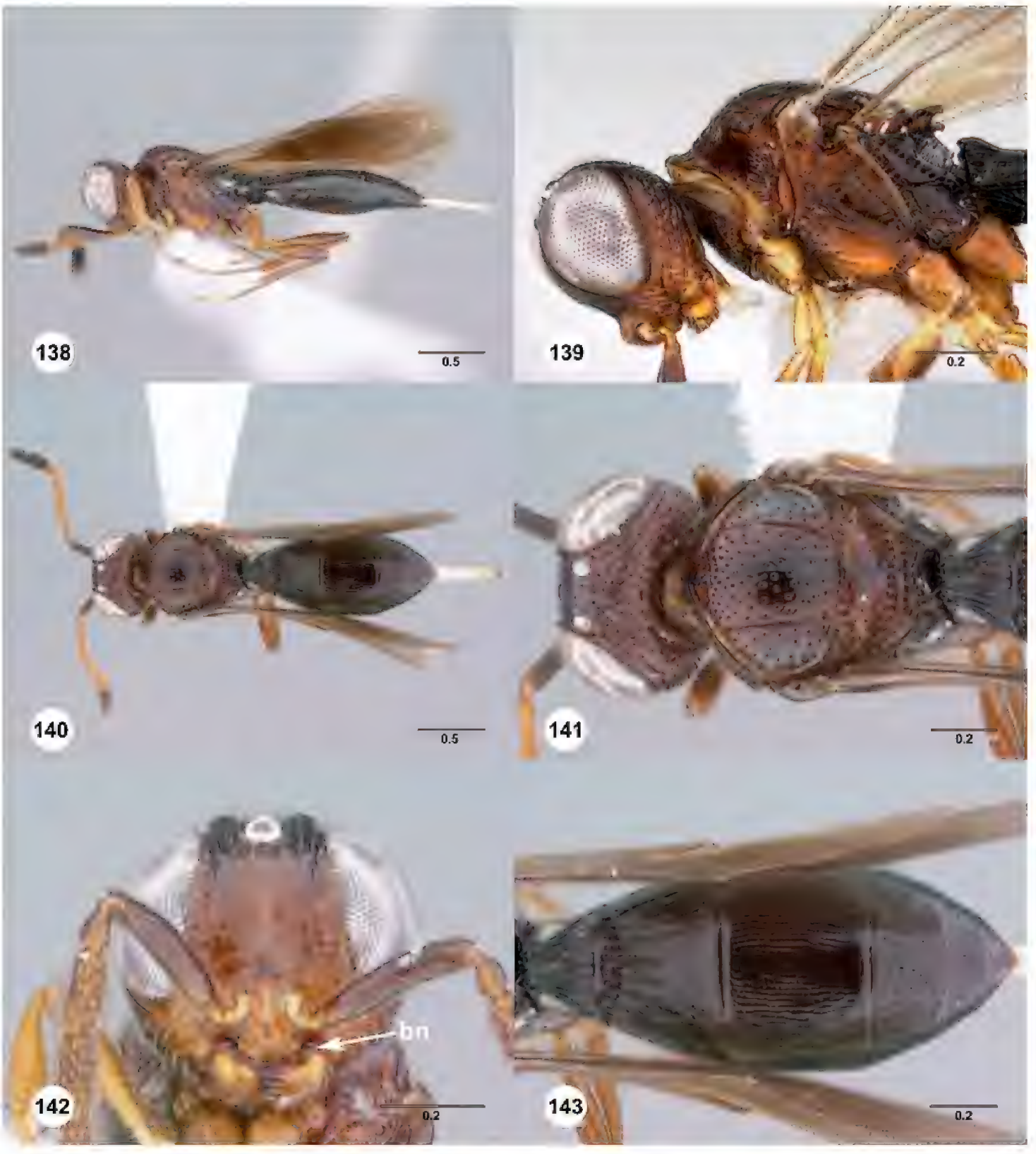
Material Examined. Holotype, female: **MADAGASCAR:** Fianarantsoa Auto. Prov., Belle Vue trail, Ranomafana National Park, 21°15.99'S 47°25.21'E, 1150m, 8.XII–20.XII.1999, M. E. Irwin, OSUC 181013 (deposited in CASC). Paratypes: **MADAGASCAR:** 1 female, 3 males, CASENT 2136023–2136024, 8106455 (CASC); CASENT 2134796 (OSUC).

***Trichoteleia janus* Talamas & Masner, sp. n.**
urn:lsid:zoobank.org:act:ADDC7428-2F9A-4DC7-B4CF-BA18BA9AA4B9
urn:lsid.biosci.ohio-state.edu:osuc_concepts:241287
Figures 6, 8, 14, 23, 38, 47, 138–143; Morphbank[21]

Description. Female body length: 2.26–2.69 mm (n=4). Male body length: 2.41–2.73 mm (n=4). Color of head: dark brown to black; reddish brown. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Sculpture of medial frons in male: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: finely punctate throughout, dorsoventrally strigose laterally; finely punctate throughout, surface uneven. Sculpture of posterior vertex: moderately punctate, rugose posterior to eyes and posterior ocellus. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: variably red to black. Color of mesosoma in male: variably red to black. Sculpture along posterior pronotal sulcus: striate, striae short and poorly defined; rugulose. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth medially, sparsely punctate laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: punctate rugose. Sculpture of posterolateral mesepisternum: smooth. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: rugulose. Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex; with blunt kink near intersection with metapleural sulcus. Color of legs: pale brown throughout; brown throughout.

Color of metasoma in female: dark brown to black throughout. Color of metasoma in male: dark brown to black throughout. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: absent; present. Microsculpture on T4: absent. Horn on T1 in female: absent; present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally striate throughout. Macrosculpture of medial T3 in female: weakly longitudinally striate; longitudinally striate. Macrosculpture of lateral T3 in female: longitudinally striate. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: weakly longitudinally strigose. Punc-



Figures 138–143.[90] 138, *Trichoteleia janus* sp. n. Lateral habitus, female (CASENT 2042242) **139** Head and mesosoma, lateral view, female holotype (CASENT2135979) **140** Dorsal habitus, female (CASENT 2042242) **141** Head and mesosoma, dorsal view, female (CASENT 2042242) **142** Head, anterior view, female (CASENT 2043786) **143** Metasoma, dorsal view, female (CASENT 2042242). Scale bars in millimeters.

tation of T4 in female: sparse throughout; absent along midline, otherwise sparse; absent along midline, otherwise moderately dense. Macrosculpture of T5 in female: absent. Punctation of T5 in female: moderately dense throughout; sparse throughout. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth with fine setigerous punctures laterally. Macrosculpture of T2 in male: longitudinally striate

throughout. Macrosculpture of medial T3 in male: longitudinally striate. Macrosculpture of lateral T3 in male: longitudinally striate. Macrosculpture of T4 in male: longitudinally strigose laterally. Punctation of T4 in male: sparse throughout; absent along midline, otherwise sparse. Macrosculpture of T5 in male: absent. Punctation of T5 in male: moderately dense throughout. Sculpture of S2: longitudinally striate throughout; longitudinally striate anteriorly, smooth posteriorly. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: infuscate throughout; slightly infuscate throughout. Color of forewing in male: slightly infuscate throughout. Color of hind wing: infuscate throughout; slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: reduced posterior to Sc+R. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. This species shares its characters with many others in *Trichoteleia* and is identified more by its unique combination of states than by a single distinct character. The abrupt transition from punctate rugose to smooth sculpture along the anterior mesepisternum, a smooth T6, the mostly smooth sculpture of T4–T5, and mandibular node help to identify this species.

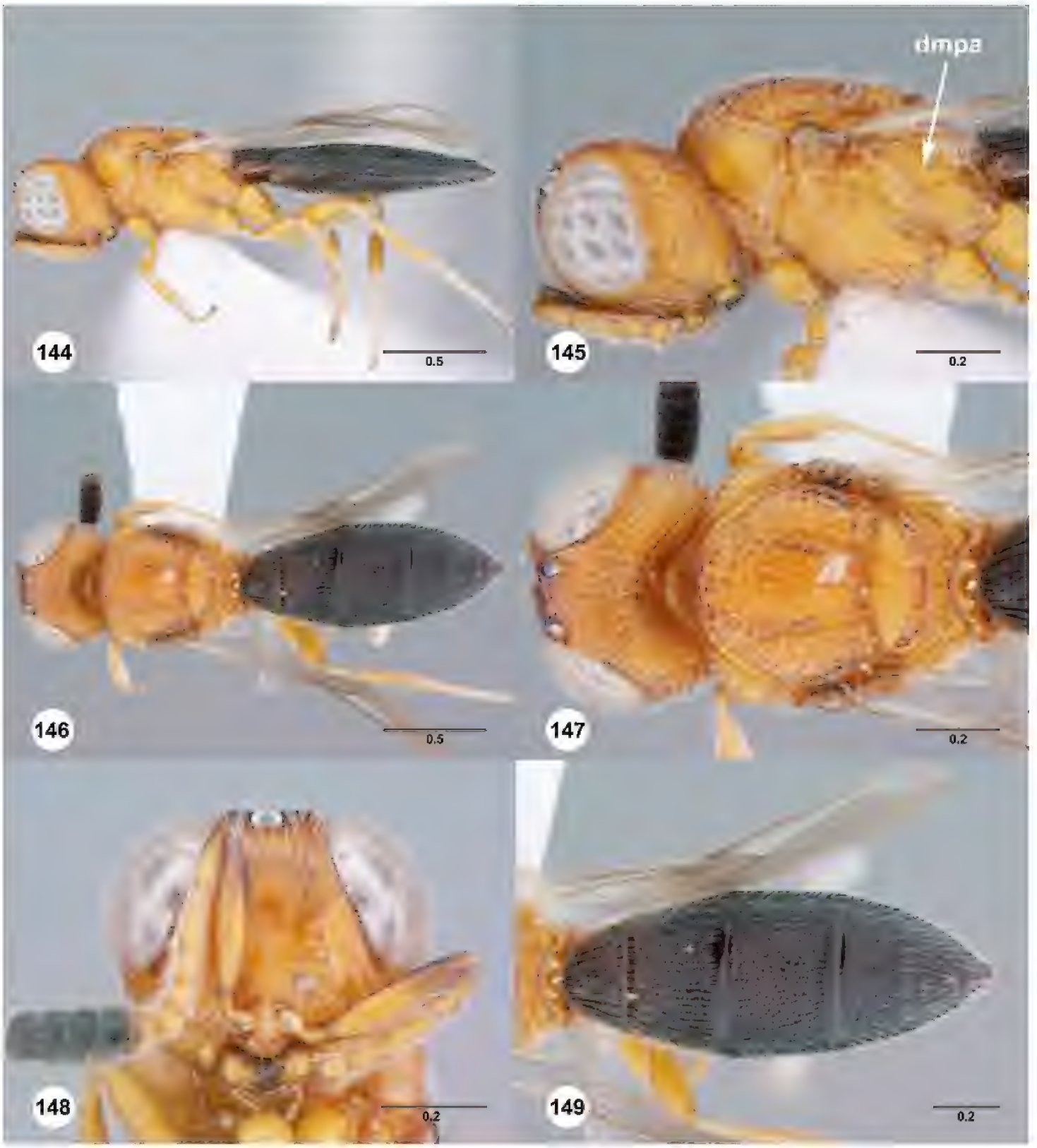
Etymology. The epithet *janus*, referring to the Roman god of gates and doors, is an allusion to the juxtaposition of sculptural types on the anterior mesepisternum. This is a noun in apposition.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=241287]

Material Examined. Holotype, female: **MADAGASCAR:** Antsiranana Auto. Prov., MA-01-01A-07, Montagne d'Ambre National Park, 12°30'52"S 49°10'53"E, 960m, 12.II–4.III.2001, malaise trap, R. Harin'Hala, CASENT 2135979 (deposited in CASC). Paratypes: **MADAGASCAR:** 4 females, 4 males, CASENT 2042242, 2043773, 2043786, 2043794, 2136576 (CASC); CASENT 2135787, 2136176, OSUC 215576 (OSUC).

***Trichoteleia jiro* Talamas, sp. n.**
urn:lsid:zoobank.org:act:3DADAE94-4FAD-4A53-B00B-9C153FAD9E8A
urn:lsid.biosci.ohio-state.edu:osuc_concepts:241279
Figures 42, 49–50, 144–149, 306; Morphbank[22]

Description. Female body length: 2.35–2.49 mm (n=3). Male body length: 2.32–2.44 mm (n=7). Color of head: orange throughout; pale brown throughout. Central keel of frons: present, ending above interantennal process. Sculpture of medial frons in female: smooth. Sculpture of medial frons in male: smooth. Number of mandibular teeth: three. Basal node on mandible: absent. Sculpture of frons below median ocellus: punctate rugulose throughout; densely punctate throughout. Sculpture of posterior vertex: densely punctate; punctate rugose. Occipital rim: comprised of small to miniscule cells. Sculpture of gena: punctate rugose. Basiconic sensillum on A7: absent.



Figures 144–149.[91] *Trichoteleia jiro* sp. n., female holotype (CASENT 2043784). **144** Lateral habitus **145** Head and mesosoma, lateral view **146** Dorsal habitus **147** Head and mesosoma, dorsal view **148** Head, anterior view **149** Metasoma, dorsal view. Scale bars in millimeters.

Color of mesosoma in female: orange throughout. Color of mesosoma in male: pale brown throughout. Sculpture along posterior pronotal sulcus: rugulose. Notaulus: smooth furrow incomplete, reaching suprahumeral sulcus as row of punctures. Sculpture of medial mesoscutum: smooth and sparsely punctate posteriorly, densely punctate and transverely rugulose anteriorly; moderately punctate in posterior half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth with sparse fine punctures throughout; smooth medially, sparsely punctate laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of

prespecular sulcus: punctate; coarsely punctate. Sculpture of posterolateral mesepisternum: punctate; coarsely punctate. Sculpture of ventral surface of mesepisternum: finely punctate; smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: dense. Sculpture of metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle: with blunt kink near intersection with metapleural sulcus. Color of legs: yellow throughout; pale brown throughout.

Color of metasoma in female: dark brown to black throughout. Color of metasoma in male: dark brown to black throughout. Posterior margin of transverse sulcus on T2: straight. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: present. Horn on T1 in female: absent. Macrosculpture of T2 in female: longitudinally strigose throughout. Macrosculpture of medial T3 in female: reticulate. Macrosculpture of lateral T3 in female: longitudinally strigose. Macrosculpture of medial T4 in female: longitudinally strigose; weakly rugulose. Macrosculpture of lateral T4 in female: longitudinally strigose. Punctation of T4 in female: sparse throughout. Macrosculpture of T5 in female: absent. Punctation of T5 in female: moderately dense throughout. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: moderately punctate throughout. Macrosculpture of T2 in male: longitudinally strigose. Macrosculpture of medial T3 in male: reticulate. Macrosculpture of lateral T3 in male: longitudinally strigose. Macrosculpture of T4 in male: longitudinally strigose throughout. Punctation of T4 in male: sparse throughout. Macrosculpture of T5 in male: weakly rugulose laterally. Punctation of T5 in male: moderately dense throughout. Sculpture of S2: coarsely punctate throughout. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: hyaline throughout. Color of forewing in male: hyaline throughout. Color of hind wing: hyaline throughout. Density of setation in fore wing: reduced posterior to Sc+R in basal half. Density of setation in hind wing: reduced posterior to Sc+R. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: spectral.

Diagnosis. *Trichoteleia jiro* is similar in habitus to a number of species that have a subspherical head, coarse punctation on the gena and vertex, and spectral veins in the forewing: *T. afo, T. bicolor, T. sphaerica* and *T. minima*. It may be may separated from them by the combination of a hyaline forewing, absence of horn on T1 in females, and dorsal metapleural area that is entirely to nearly entirely punctate rugose. Females of *T. jiro* may also be recognized by the color pattern of bright orange head and mesosoma and black metasoma. However, females of *T. afo* usually have a similar pattern but with a red head and mesosoma and black metasoma. Thus color should be used only as a supporting character for identification. Males of *T. jiro* have a brown head and mesosoma and dark brown to black metasoma (Fig. 306), serving to distinguish it from the similarly shaped *T. afo.*

Etymology. The species name *jiro*, to be treated as a noun in apposition, means "torch" in Malagasy. This epithet refers to the color pattern of females in this species.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=241279]

Material Examined. Holotype, female: **MADAGASCAR:** Toamasina Auto. Prov., botanical garden nr. entrance, tropical forest, MA-01-08B-20, Mantadia (Andasibe) National Park, 18°55.58'S 48°24.47'E, 1025m, 16.XI–23.XI.2001, malaise trap, R. Harin'Hala, CASENT 2043784 (deposited in CASC). Paratypes: **MADAGASCAR:** 4 females, 8 males, CASENT 2043516, 2043774, 2043785, 2133946–2133947, 2134005, 2136417, 2136587, 2136605 (CASC); OSUC 143329 (CNCI); CASENT 2043393, 2136590 (OSUC).

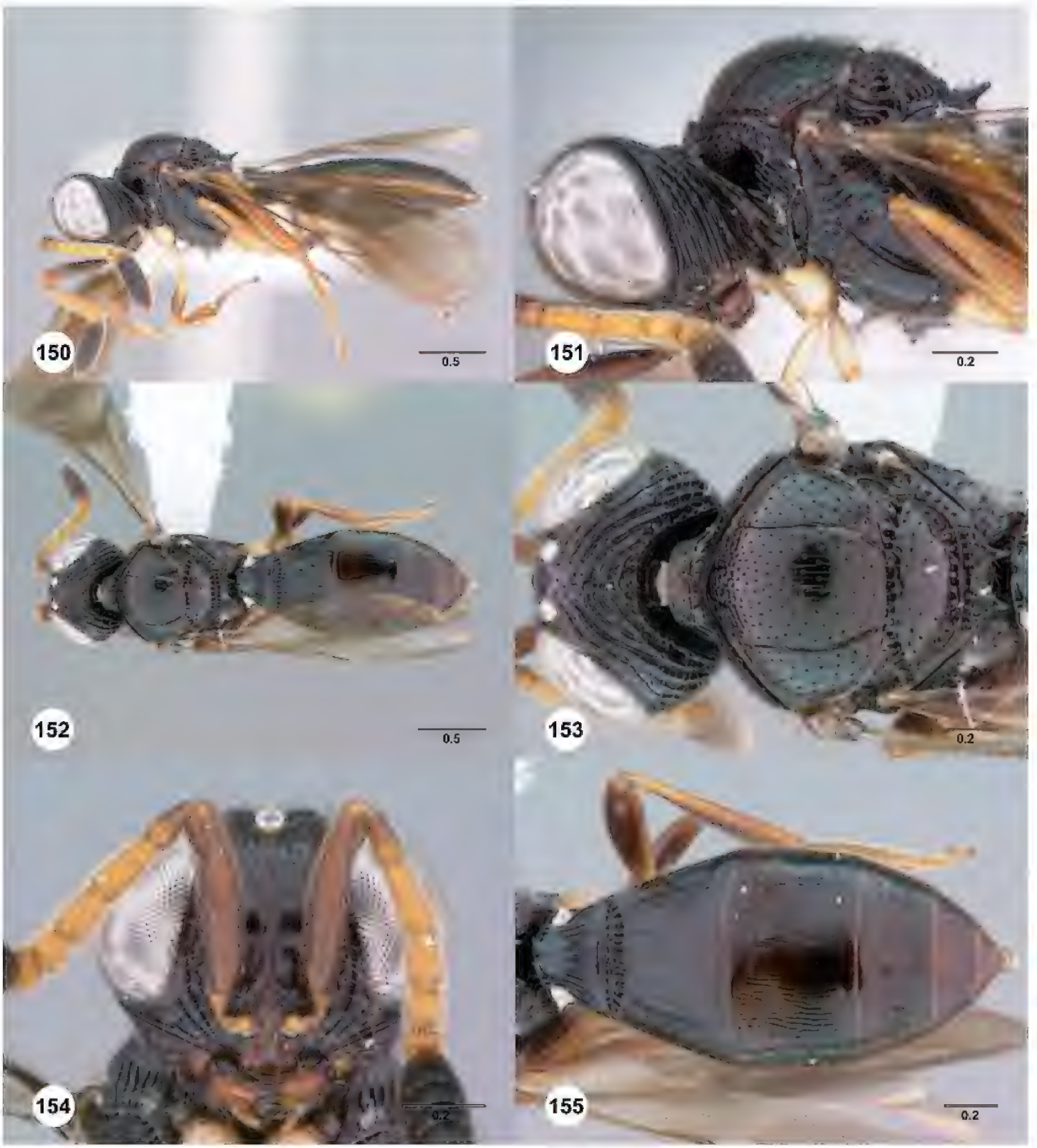
Trichoteleia ketrona Talamas, sp. n.

urn:lsid:zoobank.org:act:D836A36A-71A5-4E77-B80B-D4FE8516BE66
urn:lsid.biosci.ohio-state.edu:osuc_concepts:241290
Figures 150–155; Morphbank[23]

Description. Female body length: 3.31 mm (n=1). Color of head: dark brown to black. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: finely punctate throughout, dorsoventrally strigose laterally. Sculpture of posterior vertex: concentrically rugose. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: coarsely striate. Basiconic sensillum on A7: absent.

Color of mesosoma in female: dark brown to black. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth medially, sparsely punctate laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: punctate rugose. Sculpture of posterolateral mesepisternum: smooth. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: rugulose. Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex. Color of legs: coxae and trochanters yellow, otherwise brown, becoming paler distally.

Color of metasoma in female: dark brown to black throughout. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: absent. Microsculpture on T3: absent. Microsculpture on T4: absent. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally striate throughout. Macrosculpture of medial T3 in female: weakly longitudinally striate. Macrosculpture of lateral T3 in female: longitudinally striate. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: punctate rugulose. Punctation of T4 in female: absent along midline, otherwise sparse. Macrosculpture of T5 in female: punctate rugulose laterally.



Figures 150–155.[92] *Trichoteleia ketrona* sp. n., female holotype (CASENT 2042842). **150** Lateral habitus **151** Head and mesosoma, lateral view **152** Dorsal habitus **153** Head and mesosoma, dorsal view **154** Head, anterior view **155** Metasoma, dorsal view. Scale bars in millimeters.

Punctation of T5 in female: sparse in medial third, moderately dense laterally. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth with sparse moderate sized punctures. Sculpture of S2: longitudinally striate anteromedially, otherwise smooth. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: slightly infuscate throughout. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density

of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. This species has large concentric rugae along the posterior vertex similar to *T. irwini* and *T. albidipes*. It differs from them in that the rugae are less uniform and the head is transverse in dorsal view. *Trichoteleia ketrona* also does not have microsculpture on the metasoma (Fig. 155), and the anterior mesoscutum is strongly arched in lateral view (Fig. 151).

Etymology. The word *ketrona*, meaning "wrinkled" in Malagasy, refers to the rugae on the posterior vertex in this species. The epithet is to be treated as a noun in apposition.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=241290]

Material Examined. Holotype, female: **MADAGASCAR:** Fianarantsoa Auto. Prov., Talatakely, Bellevue, secondary tropical forest, MA-02-09C-60, Ranomafana National Park, 21°15.99'S 47°25.21'E, 1020m, 4.V–16.V.2003, malaise trap, R. Harin'Hala, CASENT 2042842 (deposited in CASC).

Trichoteleia levii Talamas & Johnson, sp. n.

urn:lsid:zoobank.org:act:10011783-3277-4732-8899-4B99316BB1D9
urn:lsid.biosci.ohio-state.edu:osuc_concepts:243405
Figures 12, 30, 156–161, 305; Morphbank[24]

Description. Female body length: 3.22–3.55 mm (n=6). Male body length: 3.01–3.45 mm (n=4). Color of head: dark orange, becoming brown at vertex; dark red, becoming darker dorsally; yellow throughout. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Sculpture of medial frons in male: smooth. Number of mandibular teeth: three. Basal node on mandible: absent. Sculpture of frons below median ocellus: moderately punctate throughout; finely punctate throughout. Sculpture of posterior vertex: moderately punctate; finely punctate. Occipital rim: comprised of medium to large sized cells; comprised of small to miniscule cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: variably red to black; yellow throughout. Color of mesosoma in male: variably red to black; yellow. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser and finer anteriorly. Sculpture of mesoscutellum: smooth with sparse fine punctures throughout. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: longitudinally striate; finely punctate. Sculpture of posterolateral mesepisternum: smooth; smooth except for 1 or 2 striae parallel to mesopleural carina. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: absent; sparse. Sculpture of metapleural triangle: smooth.

Figures 156–161.[93] *Trichoteleia levii* sp. n. **156** Lateral habitus, female (CASENT 2135725) **157** Head and mesosoma, lateral view, female (CASENT 2135726) **158** Dorsal habitus, female (CASENT 2135727) **159** Head and mesosoma, dorsal view, female (CASENT 2135727) **160** Head, anterior view, female (CASENT 2135726) **161** T5–T6, dorsal view, female (CASENT 2043789). Scale bars in millimeters.

Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex; with blunt kink near intersection with metapleural sulcus. Color of legs: yellow throughout.

Color of metasoma in female: dark brown to black throughout; yellow. Color of metasoma in male: dark brown to black throughout; variably yellow to brown throughout. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3:

present. Microsculpture on T4: absent. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally striate throughout. Macrosculpture of medial T3 in female: weakly longitudinally striate; weakly longitudinally strigose; longitudinally striate. Macrosculpture of lateral T3 in female: longitudinally striate; longitudinally strigose. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: weakly longitudinally strigose; longitudinally striate. Punctation of T4 in female: absent in medial third, sparse laterally; sparse in medial third, dense laterally; absent along midline, otherwise sparse. Macrosculpture of T5 in female: absent; longitudinally strigose laterally. Punctation of T5 in female: moderately dense throughout; sparse in medial third, moderately dense laterally. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: present along anterior margin. Sculpture of T6 in female: finely punctate throughout. Macrosculpture of T2 in male: longitudinally striate throughout. Macrosculpture of medial T3 in male: weakly longitudinally striate; weakly longitudinally strigose. Macrosculpture of lateral T3 in male: longitudinally striate; longitudinally strigose. Macrosculpture of T4 in male: longitudinally strigose laterally; punctate rugulose laterally. Punctation of T4 in male: sparse throughout; sparse in medial third, dense laterally; absent along midline, otherwise sparse. Macrosculpture of T5 in male: absent. Punctation of T5 in male: dense throughout; moderately dense throughout. Sculpture of S2: longitudinally striate anteriorly, smooth posteriorly. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: slightly infuscate throughout; slightly infuscate with longitudinal dark streak. Color of forewing in male: slightly infuscate throughout. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia levii* belongs to the cluster of species, including *T. prima*, and *T. tonsa*, in which the short striae along the pronotal shoulder and those of the lateral pronotum form a continuous band. *Trichoteleia levii* can be separated from *T. tonsa* and *T. prima* by the antero-posteriorly compressed axillular carina (Fig. 12) and by the combination of a smooth metapleural triangle and the absence of microsculpture on the posterior half of T6.

Etymology. *Trichoteleia levii* is named for T. Levi Blankenship (USA), a friend of the first author, in commemoration of his marriage to Mirjana Milosavljevic-Cook (USA).

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=243405]

Material Examined. Holotype, female: **MADAGASCAR:** Antsiranana Auto. Prov., 9.1km (233°) SW Daraina, rainforest, BLF9657, Binara Forest, 13°15'48"S 49°36'12"E, 650–800m, 3.XII.2003, yellow pan trap, B. L. Fisher, CASENT 2135724 (deposited in CASC). Paratypes: **MADAGASCAR:** 5 females, 4 males, CASENT 2043788, 2043790, 2135725–2135726, 2135729–2135730 (CASC); CASENT 2043789, 2135727–2135728 (OSUC).

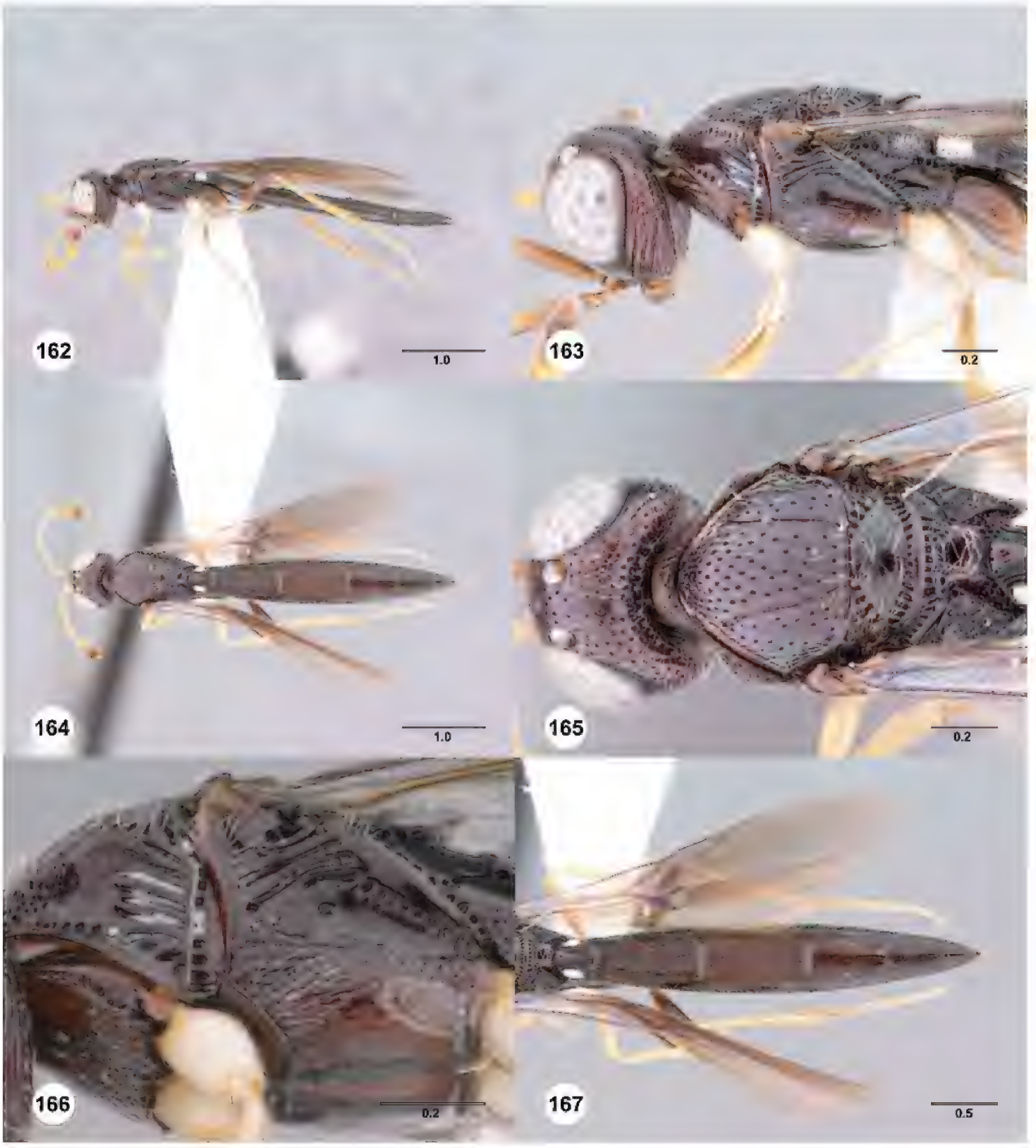
Comments: Two color patterns, corresponding with different collecting locations, exist in this species. The specimens found near the northern tip of Antsiranana were collected in dwarf forest along Kakalava beach and have a red head and mesosoma and a black metasoma (161, 305). Specimens collected farther south in rainforest habitat are slightly smaller and almost entirely yellow with finer punctation on the head and mesosoma (Figs 156–160).

***Trichoteleia longiventris* Talamas & Masner, sp. n.**
urn:lsid:zoobank.org:act:4050C511-3E5C-4A80-8A28-CC895E3BCD3C
urn:lsid.biosci.ohio-state.edu:osuc_concepts:238235
Figures 162–167; Morphbank[25]

Description. Female body length: 4.80 mm (n=1). Color of head: reddish brown. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: absent. Sculpture of frons below median ocellus: finely punctate throughout. Sculpture of posterior vertex: finely punctate. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: reddish brown throughout. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth with sparse fine punctures throughout. Postacetabular sulcus: present as a smooth furrow. Mesopleural carina: present only in anterior half. Sculpture along ventral half of prespecular sulcus: punctate rugose. Sculpture of posterolateral mesepisternum: smooth except for 1 or 2 rows of fine punctures parallel to mesopleural carina. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: densely punctate. Posterior margin of metapleuron below propodeal spiracle: with blunt kink near intersection with metapleural sulcus. Color of legs: fore and mid coxa white, hind coxa and femur brown, trochanters white, legs otherwise yellow.

Color of metasoma in female: dark brown to black throughout. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: present. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally strigose throughout. Macrosculpture of medial T3 in female: rugulose. Macrosculpture of lateral T3 in female: longitudinally strigose. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: absent. Punctation of T4 in female: sparse along midline, otherwise dense. Macrosculpture of T5 in female: absent. Punctation of T5 in female: dense through-



Figures 162–167.[94] *Trichoteleia longiventris* sp. n., female holotype (OSUC 181014). **162** Lateral habitus **163** Head and mesosoma, lateral view **164** Dorsal habitus **165** Head and mesosoma, dorsal view **166** Head, anterior view **167** Metasoma, dorsal view. Scale bars in millimeters.

out. Shape of T5 in female: width of posterior margin less than length. Sculpture of T6 in female: densely and finely punctate. Sculpture of S2: densely punctate, punctures of moderate size. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: slightly infuscate throughout with metallic purple sheen. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia longiventris*, *T. quazii* and *T. carinata* are elongate species that have dark to moderate infuscation throughout the forewing and darkly pigmented Rs+M and M+Cu veins. *T. quazii* and *T. carinata* differ from *T. longiventris* by having a longitudinal median carina on S2 (Fig. 45).

Etymology. *Trichoteleia longiventris* is named for its extremely long metasoma. The epithet is a noun in apposition.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=238235]

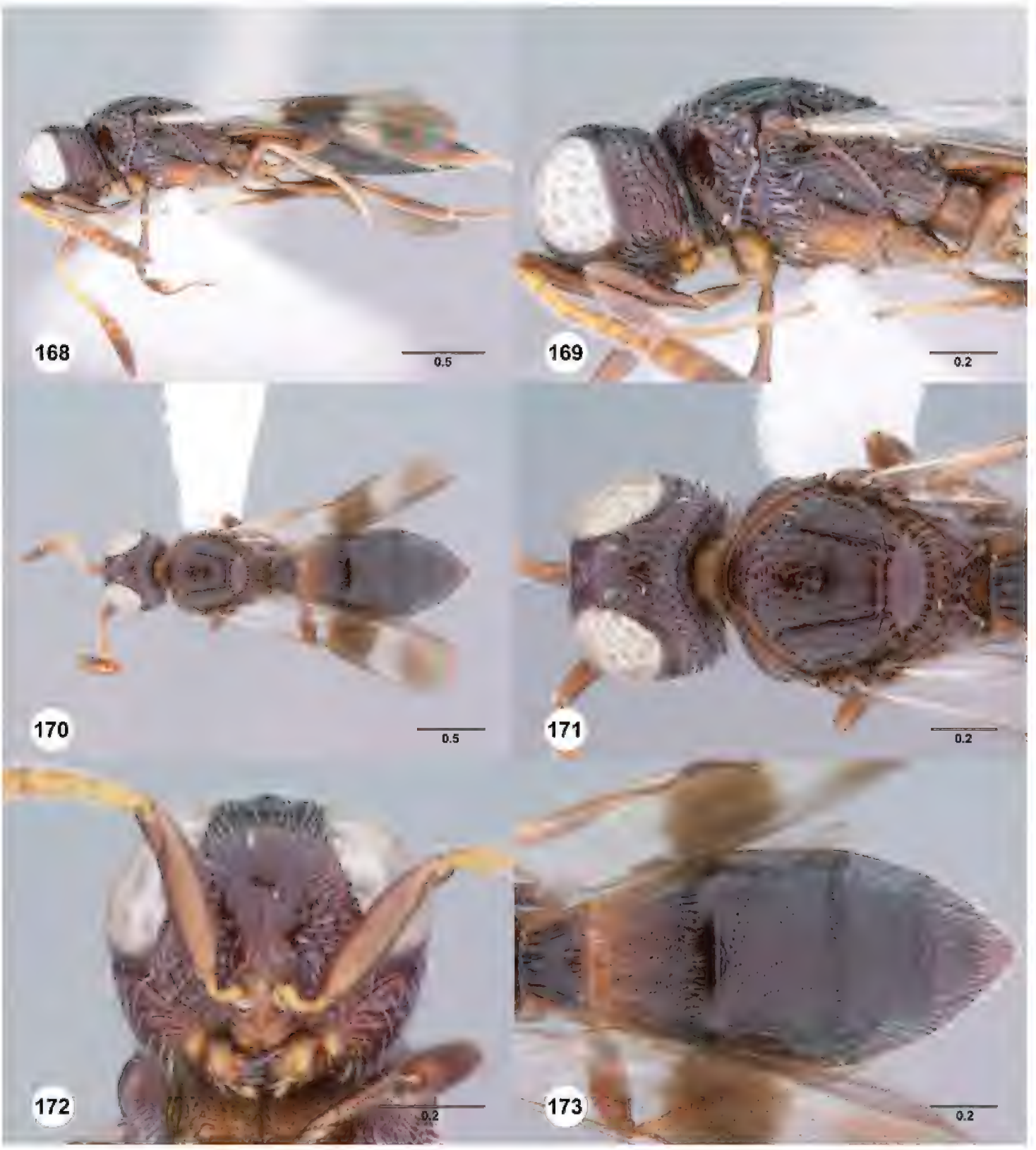
Material Examined. Holotype, female: **MADAGASCAR:** Antsiranana Auto. Prov., 12.2km WSW Befingotra, #1271, Anjanaharibe-Sud Special Reserve, 14°45'S 49°26'E, 1960m, 24.XI–29.XI.1994, B. L. Fisher, OSUC 181014 (deposited in UCDC).

Trichoteleia minima **Talamas, sp. n.**
urn:lsid:zoobank.org:act:D098AF79-F72D-4D9F-A46E-AE8BC20E5F15
urn:lsid.biosci.ohio-state.edu:osuc_concepts:243407
Figures 10, 21, 168–173; Morphbank[26]

Description. Female body length: 2.87–2.91 mm (n=2). Color of head: reddish brown. Central keel of frons: present, ending above interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: absent. Sculpture of frons below median ocellus: finely punctate throughout. Sculpture of posterior vertex: moderately punctate. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: punctate rugose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: reddish brown throughout. Sculpture along posterior pronotal sulcus: striate, striae short and poorly defined. Notaulus: smooth furrow incomplete, reaching suprahumeral sulcus as row of punctures. Sculpture of medial mesoscutum: smooth and sparsely punctate posteriorly, densely punctate and transverely rugulose anteriorly. Sculpture of mesoscutellum: smooth with few very fine punctures laterally. Postacetabular sulcus: comprised of large cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: longitudinally striate; coarsely punctate. Sculpture of posterolateral mesepisternum: coarsely punctate in longitudinal rows. Sculpture of ventral surface of mesepisternum: finely punctate. Setation of ventral metapleural area: absent. Setation of metapleural triangle: dense. Sculpture of metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle: with triangular point near intersection with metapleural sulcus; with blunt kink near intersection with metapleural sulcus. Color of legs: brown throughout.

Color of metasoma in female: S1–S2 orange, otherwise reddish brown. Posterior margin of transverse sulcus on T2: weakly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: present. Horn on T1 in female: absent. Macrosculpture of T2 in female: lon-



Figures 168–173.[95] *Trichoteleia minima* sp. n. **168** Lateral habitus, female (CASENT 2132759) **169** Head and mesosoma, lateral view, female (CASENT 2135729) **170** Dorsal habitus, female holotype (CASENT 2043543) **171** Head and mesosoma, dorsal view, female holotype (CASENT 2043543) **172** Head, anterior view, female holotype (CASENT 2043543) **173** Metasoma, dorsal view, female holotype (CASENT 2043543). Scale bars in millimeters.

gitudinally strigose throughout. Macrosculpture of medial T3 in female: longitudinally strigose; rugulose. Macrosculpture of lateral T3 in female: longitudinally strigose. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: longitudinally strigose. Punctation of T4 in female: absent along midline, otherwise sparse. Macrosculpture of T5 in female: absent. Punctation of T5 in female: absent along midline, otherwise moderately dense. Shape of T5 in female: width of posterior

margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: finely punctate throughout. Sculpture of S2: coarsely punctate throughout, with longitudinal rugae laterally. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: hyaline with transverse infuscate bands medially and apically. Color of hind wing: hyaline throughout. Density of setation in fore wing: reduced posterior to Sc+R in basal half. Density of setation in hind wing: reduced posterior to Sc+R. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: spectral.

Diagnosis. *Trichoteleia minima* is similar to *T. afo* and *T. jiro* with which it shares the absence of a prominent orbital carina and the lack of a horn on T1 in females. It is easily separated from them by the very small metascutellar points, darkly banded forewing, and longitudinally strigose sculpture on T3.

Etymology. The adjectival epithet *minima*, meaning "smallest", refers to the size of the metascutellar points in this species.

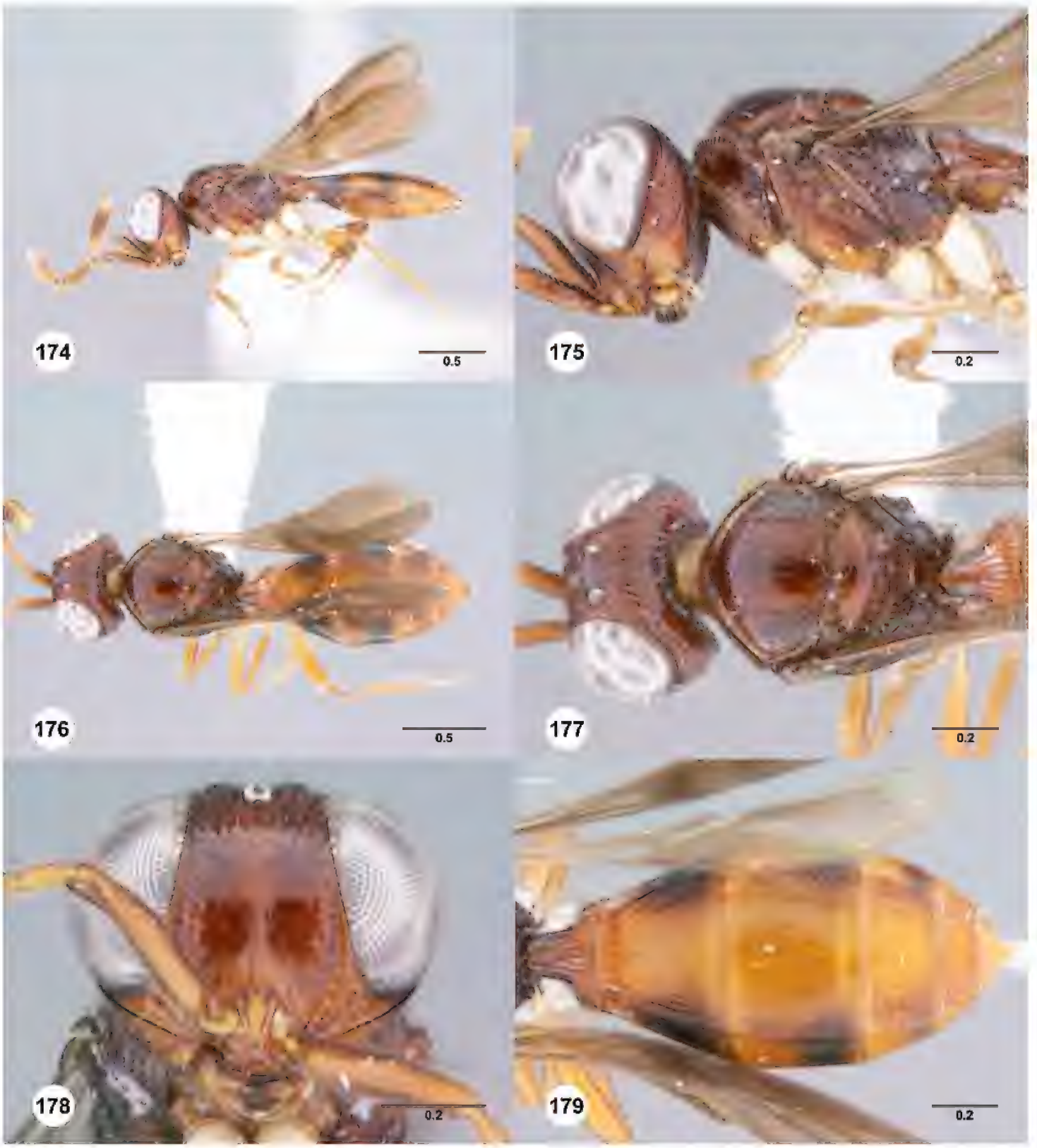
Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=243407]

Material Examined. Holotype, female: **MADAGASCAR:** Fianarantsoa Auto. Prov., Vohiparara, broken bridge, high altitude rainforest, MA-02-09A-12, Ranomafana National Park, 21°13.57'S 47°22.19'E, 1100m, 14.I–21.I.2002, malaise trap, R. Harin'Hala, CASENT 2043543 (deposited in CASC). Paratype: **MADAGASCAR:** 1 female, CASENT 2132759 (CASC).

***Trichoteleia nify* Talamas & Masner, sp. n.**
urn:lsid:zoobank.org:act:5C03417F-D16B-4882-BFB9-98BA380A6050
urn:lsid.biosci.ohio-state.edu:osuc_concepts:241272
Figures 29, 34, 37, 174–179; Morphbank[27]

Description. Female body length: 2.14–2.70 mm (n=9). Male body length: 2.22–2.90 mm (n=20). Color of head: dark brown to black; yellow, becoming darker dorsally; yellow throughout. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Sculpture of medial frons in male: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: punctate rugulose throughout; finely punctate throughout, dorsoventrally strigose laterally; moderately punctate throughout. Sculpture of posterior vertex: moderately punctate; moderately punctate, rugose posterior to eyes and posterior ocellus; finely punctate. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: punctate rugose; dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: variably red to black; variably yellow to brown. Color of mesosoma in male: dark brown to black; variably yellow to brown. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: percurrent,



Figures 174–179.[96] *Trichoteleia nify* sp. n. **174** Lateral habitus, female holotype (CASENT 2135909) **175** Head and mesosoma, lateral view, female holotype (CASENT 2135909) **176** Dorsal habitus, female holotype (CASENT 2135909) **177** Head and mesosoma, dorsal view, female holotype (CASENT 2135909) **178** Head, anterior view, female (CASENT 2135910) **179** Metasoma, dorsal view, female (CASENT 2135910). Scale bars in millimeters.

reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth medially, sparsely punctate laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: punctate rugose. Sculpture of posterolateral mesepisternum: smooth. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural

area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle: with posterolaterally projecting spine near intersection with metapleural sulcus. Color of legs: yellow throughout; brown throughout.

Color of metasoma in female: yellow to pale brown, posterolateral corners of T2–T3 dark brown. Color of metasoma in male: variably yellow to brown throughout. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: absent. Microsculpture on T3: absent. Microsculpture on T4: absent. Horn on T1 in female: present as a large, apically rounded protuberance; present as a small bulge. Macrosculpture of T2 in female: longitudinally striate throughout. Macrosculpture of medial T3 in female: weakly longitudinally striate; longitudinally striate. Macrosculpture of lateral T3 in female: longitudinally striate. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: obliquely strigose; weakly obliquely rugulose. Punctation of T4 in female: sparse in medial third, moderately dense laterally. Macrosculpture of T5 in female: absent. Punctation of T5 in female: moderately dense throughout. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth with fine setigerous punctures along lateral margin. Macrosculpture of T2 in male: striate anteriorly, with few striae reaching T3. Macrosculpture of medial T3 in male: absent. Macrosculpture of lateral T3 in male: absent; weakly longitudinally striate. Macrosculpture of T4 in male: absent. Punctation of T4 in male: sparse in medial third, moderately dense laterally; sparse throughout; absent in medial third, sparse laterally. Macrosculpture of T5 in male: absent. Punctation of T5 in male: moderately dense throughout. Sculpture of S2: longitudinally striate anteriorly, smooth posteriorly. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: slightly infuscate throughout. Color of forewing in male: slightly infuscate throughout. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: reduced posterior to Sc+R. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia nify* may be identified by the presence of a spine along the posterior margin of the metapleuron near the intersection of the margin with the metapleural sulcus (Fig. 29) and the presence of a flange dorsal to the lateral setal patch on T1 (Fig. 29).

Etymology. This species is given the name *nify*, a noun in apposition, meaning "tooth" in Malagasy, in reference to its metapleural spine.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=241272]

Material Examined. Holotype, female: **MADAGASCAR:** Fianarantsoa Auto. Prov., 7.5km ENE Ivohibe, #1745, Pic d'Ivohibe Special Reserve, 22°28.2'S 46°57.6'E, 900m, 7.X–12.X.1997, B. L. Fisher, CASENT 2135909 (deposited in CASC). Paratypes: **MADAGASCAR:** 12 females, 80 males, CASENT 2118402, 2118405,

2134160, 2134166, 2134170, 2135782–2135786, 2135790, 2135792–2135793, 2135797, 2135799–2135800, 2135804–2135805, 2135813, 2135824, 2135831, 2135834, 2135837–2135840, 2135847–2135849, 2135873, 2135882–2135887, 2135901, 2136000, 2136002, 2136004, 2136006–2136008, 2136011, 2136026, 2136122, 2136124–2136125, 2136136, 2136145, 2136150, 2136152, 2136155, 2136160, 2136163, 8106458, 8106462, OSUC 181028, OSUC 266089, OSUC 266094 (CASC); CASENT 2134088, 2134101 (CNCI); CASENT 2135806, 2135823, 2135872, 2135910, 2135968, 2136010, 2136014, 2136016, 2136018, 2136021, 2136069, 2136126, 2136137–2136138, 2136140–2136141, 2136144, 2136146, 2136153–2136154, 2136159, 2136167 (OSUC); OSUC 181029–181036 (USNM).

Trichoteleia oculea **Talamas & Masner, sp. n.**
urn:lsid:zoobank.org:act:4F9FCD1E-B5ED-4AFA-8AB7-7959C60A1A6F
urn:lsid.biosci.ohio-state.edu:osuc_concepts:243415
Figures 15, 26, 180–185; Morphbank[28]

Description. Female body length: 2.94–3.36 mm (n=3). Color of head: reddish brown. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: moderately punctate throughout; punctate laterally, mostly smooth medially. Sculpture of posterior vertex: moderately punctate medially, densely punctate laterally. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: reddish brown throughout. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: sparsely punctate, becoming denser anteriorly. Sculpture of mesoscutellum: smooth with sparse fine punctures throughout. Postacetabular sulcus: comprised of large cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: finely punctate. Sculpture of posterolateral mesepisternum: smooth. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: rugulose; punctate rugose. Posterior margin of metapleuron below propodeal spiracle: with blunt kink near intersection with metapleural sulcus. Color of legs: pale brown throughout.

Color of metasoma in female: reddish brown. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: present. Horn on T1 in female: absent. Macrosculpture of T2 in female: longitudinally striate throughout. Macrosculpture of medial T3 in female: absent; weakly longitudinally strigose. Macrosculpture of lateral T3 in female: longitudinally strigose. Macrosculpture of me-

Figures 180–185.[97] *Trichoteleia oculea* sp. n. **180** Lateral habitus, female (CASENT 2135908) **181** Head and mesosoma, lateral view, female (CASENT 2135908) **182** Dorsal habitus, female holotype (CASENT 2135906) **183** Head and mesosoma, dorsal view, female holotype (CASENT 2135906) **184** Head, anterior view, female holotype (CASENT 2135906) **185** Metasoma, dorsal view, female holotype (CASENT 2135906). Scale bars in millimeters.

dial T4 in female: absent. Macrosculpture of lateral T4 in female: punctate rugulose; longitudinally strigose. Punctation of T4 in female: absent along midline, otherwise moderately dense. Macrosculpture of T5 in female: absent. Punctation of T5 in female: moderately dense throughout. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth with sparse fine setigerous punctures throughout. Sculpture of

S2: longitudinally strigose throughout, punctate interstitially. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: infuscate throughout. Color of hind wing: infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: less than 1.5 times as long as rs. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia oculea* is most similar to *T. tahotra* with which it shares an apical projection on the lateral propodeal area and R1 (postmarginal vein) approximately equal in length to r (stigmal vein) in the forewing. These species are easily separated by the prominent striation of the lateral pronotum (Fig. 15) and lack of a basiconic sensillum on A7 in *T. oculea* (as in Fig. 2).

Etymology. The adjectival epithet *oculea*, meaning "having many eyes," refers to the large size of the eyes in this species.

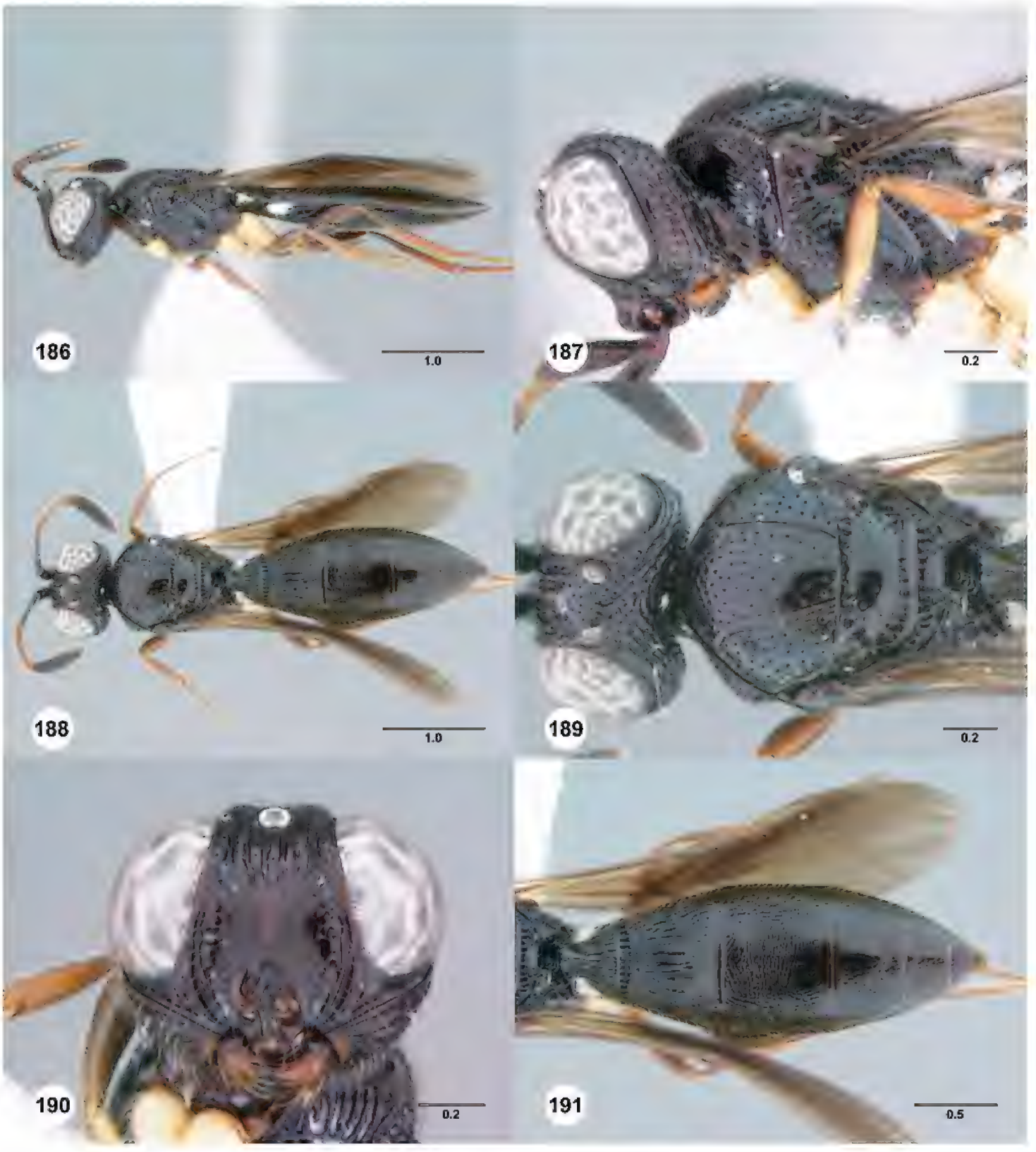
Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=243415]

Material Examined. Holotype, female: **MADAGASCAR:** Antsiranana Auto. Prov., 10.8km (229°) SW Antanambao, leaf mold / rotten wood / rainforest, #1996, Manongarivo Special Reserve, 13°57.7'S 48°26.0'E, 400m, 8.XI.1998, sifted litter, B. L. Fisher, CASENT 2135906 (deposited in CASC). Paratypes: **MADAGASCAR:** 2 females, CASENT 2135907–2135908 (CASC).

Trichoteleia orona **Talamas & Masner, sp. n.**
urn:lsid:zoobank.org:act:1B4F6F9B-BEE9-430E-B95E-970F77175F95
urn:lsid.biosci.ohio-state.edu:osuc_concepts:241278
Figures 2, 40, 48, 186–191; Morphbank[29]

Description. Female body length: 4.15–4.50 mm (n=6). Male body length: 3.24–4.07 mm (n=6). Color of head: dark brown to black. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Sculpture of medial frons in male: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: dorsoventrally strigose throughout; dorsoventrally strigose throughout with coarsely punctate interstices. Sculpture of posterior vertex: concentrically rugose; moderately punctate, rugose posterior to eyes and posterior ocellus. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: dark brown to black. Color of mesosoma in male: dark brown to black. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth medially, sparsely punctate laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture



Figures 186–191.[98] *Trichoteleia orona* sp. n. **186** Lateral habitus, female holotype (CASENT 2043194) **187** Head and mesosoma, lateral view, female (CASENT 2043432) **188** Dorsal habitus, female holotype (CASENT 2043194) **189** Head and mesosoma, dorsal view, female holotype (CASENT 2043194) **190** Head, anterior view, female (CASENT 2136251) **191** Metasoma, dorsal view, female holotype (CASENT 2043194). Scale bars in millimeters.

along ventral half of prespecular sulcus: areolate rugose; coarsely punctate. Sculpture of posterolateral mesepisternum: smooth; punctate; smooth except for 1 or 2 rows of fine punctures parallel to mesopleural carina. Sculpture of ventral surface of mesepisternum: finely punctate; smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: rugulose; punctate rugose. Posterior margin of metapleuron below propodeal spiracle: with blunt kink

near intersection with metapleural sulcus. Color of legs: coxae and trochanters yellow, otherwise brown, becoming paler distally.

Color of metasoma in female: dark brown to black throughout. Color of metasoma in male: dark brown to black throughout. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: absent. Microsculpture on T3: absent. Microsculpture on T4: absent. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally striate throughout. Macrosculpture of medial T3 in female: transversely striate. Macrosculpture of lateral T3 in female: longitudinally strigose; rugulose. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: weakly longitudinally strigose. Punctation of T4 in female: sparse in medial third, moderately dense laterally; absent along midline, otherwise moderately dense. Macrosculpture of T5 in female: weakly rugulose laterally. Punctation of T5 in female: moderately dense throughout; dense throughout; sparse along midline, otherwise dense. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: present along anterior margin. Sculpture of T6 in female: moderately punctate throughout. Macrosculpture of T2 in male: longitudinally striate throughout. Macrosculpture of medial T3 in male: longitudinally striate; transversely striate; weakly rugulose. Macrosculpture of lateral T3 in male: longitudinally strigose. Macrosculpture of T4 in male: absent; weakly rugulose laterally. Punctation of T4 in male: sparse along midline, otherwise dense. Macrosculpture of T5 in male: absent. Punctation of T5 in male: dense throughout. Sculpture of S2: longitudinally striate anteriorly, smooth posteriorly; longitudinally striate medially, punctate interstitially. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: infuscate throughout. Color of forewing in male: infuscate throughout. Color of hind wing: infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia orona* is a large and distinctive species. The females can be identified by the transverse striation of medial T3 alone (Fig. 191). Males are very similar to *T. takariva* and can be reliably separated by the presence of a dorsal flange on the interantennal process (Fig. 187) and a densely punctate T5 (Fig. 40).

Etymology. The name *orona*, meaning "nose" in Malagasy, is given to this species, as a noun in apposition, for the dorsal flange on the interantennal process.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=241278]

Material Examined. Holotype, female: **MADAGASCAR:** Fianarantsoa Auto. Prov., Talatakely, Bellevue, secondary tropical forest, MA-02-09C-03, Ranomafana National Park, 21°15.99'S 47°25.21'E, 1020m, 15.XI–22.XI.2001, malaise trap, R. Harin'Hala, CASENT 2043194 (deposited in CASC). Paratypes: **MADAGASCAR:** 7 females, 6 males, CASENT 2008633, 2043795, 2134153, 2134171, 2135967, 2136251, OSUC 181003 (CASC); CASENT 2134181, OSUC 181005 (CNCI); CASENT 2043432, 2136612, OSUC 254611 (OSUC); OSUC 181004 (USNM).

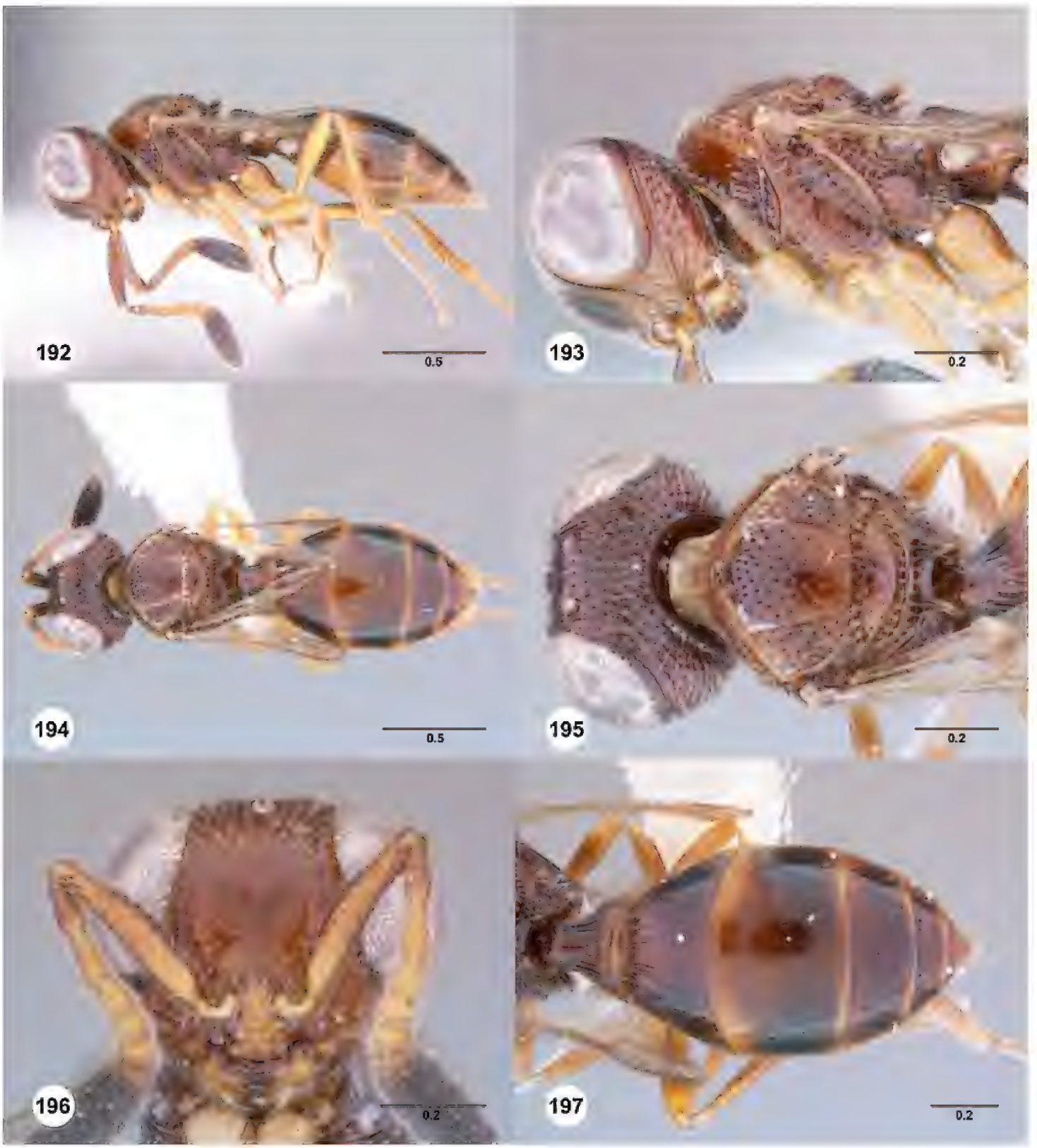
***Trichoteleia parvipennis* Talamas & Masner, sp. n.**
urn:lsid:zoobank.org:act:A862CAA6-67ED-4F68-8ADA-9EB5F980728C
urn:lsid.biosci.ohio-state.edu:osuc_concepts:243850
Figures 192–197; Morphbank[30]

Description. Female body length: 2.17–2.34 mm (n=4). Color of head: reddish brown. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: finely punctate throughout, dorsoventrally strigose laterally; moderately punctate throughout. Sculpture of posterior vertex: moderately punctate; moderately punctate, rugose posterior to eyes and posterior ocellus. Occipital rim: comprised of small to miniscule cells. Sculpture of gena: punctate rugulose; dorsoventrally strigose. Basiconic sensillum on A7: present.

Color of mesosoma in female: variably yellow to brown. Sculpture along posterior pronotal sulcus: striate, striae well defined; striate, striae short and poorly defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: sparsely punctate, becoming denser anteriorly. Sculpture of mesoscutellum: smooth with sparse fine punctures throughout. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: areolate rugose. Sculpture of posterolateral mesepisternum: areolate rugose. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: rugulose. Posterior margin of metapleuron below propodeal spiracle: with triangular point near intersection with metapleural sulcus. Color of legs: yellow throughout; pale brown throughout.

Color of metasoma in female: variably patterned in alternating orange and brown. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: absent. Microsculpture on T3: absent. Microsculpture on T4: absent. Horn on T1 in female: present as a large protuberance, curved posteriorly at apex. Macrosculpture of T2 in female: striate anteriorly, with few striae reaching T3. Macrosculpture of medial T3 in female: absent. Macrosculpture of lateral T3 in female: absent. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: absent; weakly obliquely rugulose along anterior margin. Punctation of T4 in female: absent along midline, otherwise sparse. Macrosculpture of T5 in female: absent. Punctation of T5 in female: moderately dense throughout. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth with fine setigerous punctures along lateral margin. Sculpture of S2: crenulate along anterior margin, otherwise smooth with small punctures throughout. Prominent longitudinal median carina on S2: absent.

Wings: brachypterous, apex of forewing ending before midpoint of T3. Color of forewing in female: slightly infuscate throughout. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r.



Figures 192–197.[99] *Trichoteleia parvipennis* sp. n. **192** Lateral habitus, female holotype (OSUC 181021) **193** Head and mesosoma, lateral view, female holotype (OSUC 181021) **194** Dorsal habitus, female (OSUC 181022) **195** Head and mesosoma, dorsal view, female holotype (OSUC 181021) **196** Head, anterior view, female (OSUC 181023) **197** Metasoma, dorsal view, female holotype (OSUC 181021). Scale bars in millimeters.

Diagnosis. *Trichoteleia parvipennis, T. echinata* and *T. halterata* are the only known brachypterous species of *Trichoteleia*. *Trichoteleia parvipennis* has a basiconic sensillum on A7 that separates it from these species in the female sex.

Etymology. The Latin name *parvipennis,* a noun in apposition, refers to the reduced size of the wings.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=243850]

Material Examined. Holotype, female: **MADAGASCAR:** Fianarantsoa Auto. Prov., rainforest, 36km S Ambalavao, 22°12'S 46°58'E, 23.X.1993, Berlese funnel, B. L. Fisher, OSUC 181021 (deposited in CASC). Paratypes: **MADAGASCAR:** 3 females, CASENT 2135903, OSUC 181022, OSUC 181023 (CASC).

***Trichoteleia pauliani* (Risbec)**
urn:lsid:zoobank.org:act:E584F9D9-5C8F-4868-9860-83B0902D4505
urn:lsid.biosci.ohio-state.edu:osuc_concepts:5508
Figures 4, 198–203; Morphbank[31]

Alloteleia pauliani: Risbec, 1956: 255. Original description.
Trichoteleia pauliani: Masner, 1976: 41. Generic transfer.

Description. Female body length: 2.99–3.25 mm (n=5). Male body length: 2.60–3.16 mm (n=19). Color of head: dark brown to black; yellow, becoming darker dorsally; yellow throughout. Central keel of frons: absent; present, ending above interantennal process. Sculpture of medial frons in female: smooth. Sculpture of medial frons in male: smooth. Number of mandibular teeth: three. Basal node on mandible: absent. Sculpture of frons below median ocellus: densely punctate throughout. Sculpture of posterior vertex: densely punctate; moderately punctate medially, densely punctate laterally. Occipital rim: comprised of small to miniscule cells. Sculpture of gena: punctate rugose; dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: dark brown to black; yellow throughout. Color of mesosoma in male: dark brown to black; variably yellow to brown. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: smooth furrow incomplete, reaching suprahumeral sulcus as row of punctures. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth with sparse fine punctures throughout; smooth medially, sparsely punctate laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: absent; present. Sculpture along ventral half of prespecular sulcus: punctate. Sculpture of posterolateral mesepisternum: smooth; smooth except for 1 or 2 rows of fine punctures parallel to mesopleural carina. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: absent; sparse. Sculpture of metapleural triangle: smooth; finely punctate. Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex; with blunt kink near intersection with metapleural sulcus. Color of legs: yellow throughout; pale brown throughout.

Color of metasoma in female: dark brown to black throughout; T1, medial T4 brown, otherwise yellow. Color of metasoma in male: pale to dark brown throughout; dark brown to black throughout. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: present. Horn on T1 in female:

Figures 198–203.[100] *Trichoteleia pauliani* sp. n. **198** Lateral habitus, female (CASENT 2134096) **199** Head and mesosoma, lateral view, female (CASENT 2134096) **200** Dorsal habitus, female (CASENT 2134096) **201** Head and mesosoma, dorsal view, female (CASENT 2134096) **202** Head, anterior view, female (CASENT 2134091) **203** Metasoma, dorsal view, female (CASENT 2134096). Scale bars in millimeters.

present as a large, apically rounded protuberance. Macrosculpture of T2 in female: weakly longitudinally striate throughout. Macrosculpture of medial T3 in female: absent. Macrosculpture of lateral T3 in female: absent. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: absent. Punctation of T4 in female: sparse in medial third, moderately dense laterally; absent in medial third, sparse laterally. Macrosculpture of T5 in female: absent. Punctation of T5 in female: mod-

erately dense throughout. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: densely and finely punctate. Macrosculpture of T2 in male: longitudinally striate throughout; weakly longitudinally striate throughout. Macrosculpture of medial T3 in male: absent. Macrosculpture of lateral T3 in male: absent. Macrosculpture of T4 in male: absent. Punctation of T4 in male: sparse in medial third, moderately dense laterally; sparse throughout. Macrosculpture of T5 in male: absent. Punctation of T5 in male: sparse in medial third, dense laterally; sparse in medial third, moderately dense laterally. Sculpture of S2: crenulate along anterior margin, otherwise smooth with small punctures throughout. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: slightly infuscate with longitudinal dark streak. Color of forewing in male: slightly infuscate throughout; slightly infuscate with longitudinal dark streak. Color of hind wing: hyaline throughout; hyaline with faint infuscate patches posterior to R and along anterior margin apical to R. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. This species is similar to *T. hemlyae* and *T. ravaka*. It can be separated by its lack of a well-developed central keel on the frons (Figs 4, 202) and the smooth to sparsely and finely punctate metapleural triangle (Fig. 199).

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=243414]

Material Examined. Lectotype, female: **MADAGASCAR:** Antsiranana Auto. Prov., forest moss, Mount Maromokotro (Tsaratanana), 1500–1800m, X–1949, R. Paulian, MNHN 0030 (deposited in MNHN). Other material: **MADAGASCAR:** 6 females, 18 males, CASENT 2043796, 2118412, 2134093, 2134096, 2135789, 2135794, 2135807, 2135812, 2135827, 2135902, 2136139, 2136148, 2136164, 2136418, OSUC 181016, OSUC 215779 (CASC); OSUC 181017, 181063 (CNCI); CASENT 2134091, 2135811, 2135826, 2136005, 2136149, 2136193 (OSUC).

Trichoteleia picturata Talamas, sp. n.

urn:lsid:zoobank.org:act:BE93D63B-CBB3-449A-93C5-49AC57A88713
urn:lsid.biosci.ohio-state.edu:osuc_concepts:243412
Figures 18, 33, 204–209; Morphbank[32]

Description. Female body length: 2.83 mm (n=1). Color of head: pale brown, becoming darker at vertex. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: punctate rugulose throughout. Sculpture of posterior vertex: punctate rugulose. Occipital rim: comprised of small to miniscule cells. Sculpture of gena: dorsoventrally strigose.

Basiconic sensillum on A7: absent.

Figures 204–209.[101] *Trichoteleia picturata* sp. n., female holotype (CASENT 2135904). **204** Lateral habitus **205** Head and mesosoma, lateral view **206** Dorsal habitus **207** Head and mesosoma, dorsal view **208** Head, anterior view **209** Metasoma, dorsal view. Scale bars in millimeters.

Color of mesosoma in female: variably orange to brown. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: longitudinally rugulose posteriorly, transversely rugulose anteriorly. Sculpture of mesoscutellum: smooth medially, coarsely punctate laterally. Postacetabular sulcus: present as a smooth furrow. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: punctate rugose. Sculpture of posterolateral mesepisternum: smooth. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural tri-

angle: sparse. Sculpture of metapleural triangle: rugulose. Posterior margin of metapleuron below propodeal spiracle: with blunt kink near intersection with metapleural sulcus. Color of legs: coxae and trochanters yellow, otherwise pale brown, hindlegs the darkest.

Color of metasoma in female: yellow, posterior corners of T2–T4 dark brown. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: absent. Microsculpture on T3: absent. Microsculpture on T4: absent. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally striate throughout. Macrosculpture of medial T3 in female: absent. Macrosculpture of lateral T3 in female: weakly longitudinally striate. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: obliquely strigose. Punctation of T4 in female: sparse in medial third, moderately dense laterally. Macrosculpture of T5 in female: absent. Punctation of T5 in female: sparse in medial third, moderately dense laterally. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth with fine setigerous punctures along lateral margin. Sculpture of S2: longitudinally striate anteriorly, smooth posteriorly. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: infuscate in apical two-thirds, white spot near apex, two white patches medially at anterior and posterior margins. Color of hind wing: hyaline throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia picturata* is similar to *T. cincta*, *T. delilah*, and *T. zuparkoi* and shares with them the pattern of coloration on the forewings. It can be separated from *T. cincta* by the punctate rugulose sculpture below the median ocellus (Fig. 208), from *T. delilah* by the absence of a basiconic sensillum on A7, and from *T. zuparkoi* by longitudinally rugulose sculpture in the posterior half of the medial mesoscutum (Fig. 207).

Etymology. The adjectival epithet *picturata*, meaning "painted", refers to the color pattern of the forewing in this species.

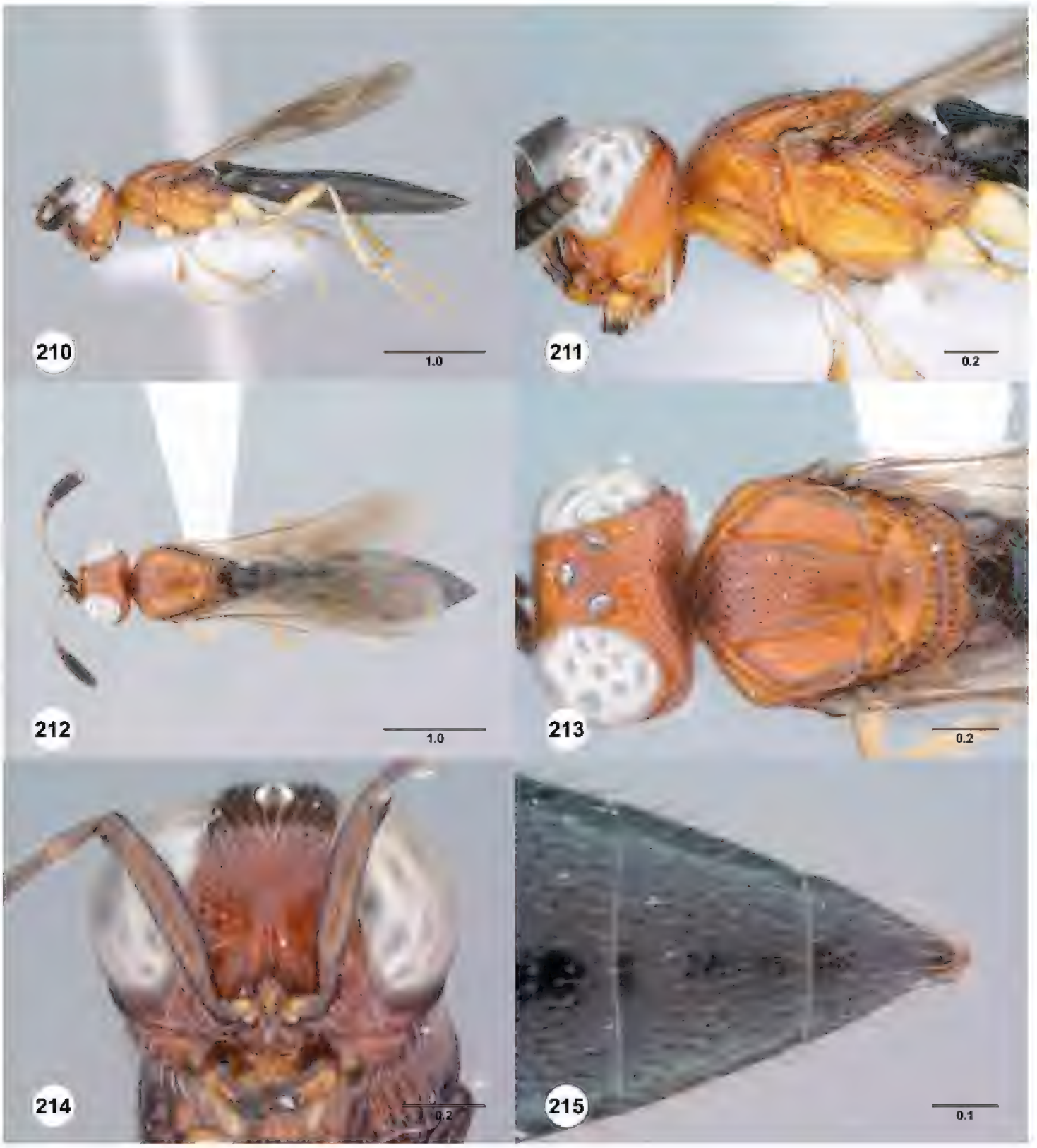
Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=243412]

Material Examined. Holotype, female: **MADAGASCAR:** Antsiranana Auto. Prov., 20.4km (219°) SW Antanambao, leaf mold / rotten wood / rainforest, #1990, Manongarivo Special Reserve, 14°02.8'S 48°24.1'E, 1860m, 3.XI.1998, sifted litter, B. L. Fisher, CASENT 2135904 (deposited in CASC).

Trichoteleia prima Talamas, sp. n.

urn:lsid:zoobank.org:act:E9611F48-6B5E-441D-A372-FECA63C75DEE
urn:lsid.biosci.ohio-state.edu:osuc_concepts:241276
Figures 11, 210–215; Morphbank[33]

Description. Female body length: 4.01–4.45 mm (n=3). Color of head: orange throughout; dark red, becoming darker dorsally. Central keel of frons: present,



Figures 210–215.[102] *Trichoteleia prima* sp. n. **210** Lateral habitus, female holotype (CASENT 2043321) **211** Head and mesosoma, lateral view, female holotype (CASENT 2043321) **212** Dorsal habitus, female holotype (CASENT 2043321) **213** Head and mesosoma, dorsal view, female holotype (CASENT 2043321) **214** Head, anterior view, female (CASENT 2134201) **215** T5–T6, dorsal view, female (CASENT 2134201). Scale bars in millimeters.

extending onto interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: absent. Sculpture of frons below median ocellus: finely punctate throughout, surface uneven. Sculpture of posterior vertex: moderately punctate. Occipital rim: comprised of small to miniscule cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: orange throughout; variably red to black. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth medially, sparsely punctate laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: finely punctate. Sculpture of posterolateral mesepisternum: smooth. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse; moderately dense. Sculpture of metapleural triangle: rugulose. Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex. Color of legs: yellow throughout.

Color of metasoma in female: dark brown to black throughout. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: absent. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally striate throughout; longitudinally strigose throughout. Macrosculpture of medial T3 in female: longitudinally striate; rugulose. Macrosculpture of lateral T3 in female: longitudinally striate; longitudinally strigose. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: longitudinally strigose. Punctation of T4 in female: sparse in medial third, dense laterally. Macrosculpture of T5 in female: absent; longitudinally strigose laterally. Punctation of T5 in female: dense throughout; sparse along midline, otherwise dense. Shape of T5 in female: width of posterior margin less than length. Microsculpture on T6 in female: present along anterior margin. Sculpture of T6 in female: finely rugulose along anterior margin, otherwise smooth with sparse punctation. Sculpture of S2: longitudinally striate medially, punctate interstitially. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: slightly infuscate throughout. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia prima* is most similar to *T. levii* and *T. tonsa*. In these three species the short striae along the pronotal shoulder and those of the lateral pronotum form a continuous band. *Trichoteleia prima* is separated from the others in this cluster by the combination of a coarsely sculptured metapleural triangle and an absence of microsculpture in the posterior half of T6.

Etymology. This species was the first that the first author examined during this revision. The adjectival epithet *prima*, meaning "first," reflects this.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=241276]

Material Examined. Holotype, female: **MADAGASCAR:** Antsiranana Auto. Prov., MA-01-01D-08, Montagne d'Ambre National Park, 12°31'13"S 49°10'45"E, 1125m, 21.IV–26.IV.2001, malaise trap, R. Harin'Hala, CASENT 2043321 (depos-

ited in CASC). Paratypes: **MADAGASCAR:** 4 females, CASENT 2008744, 2008754, 2134201 (CASC); OSUC 215614 (OSUC).

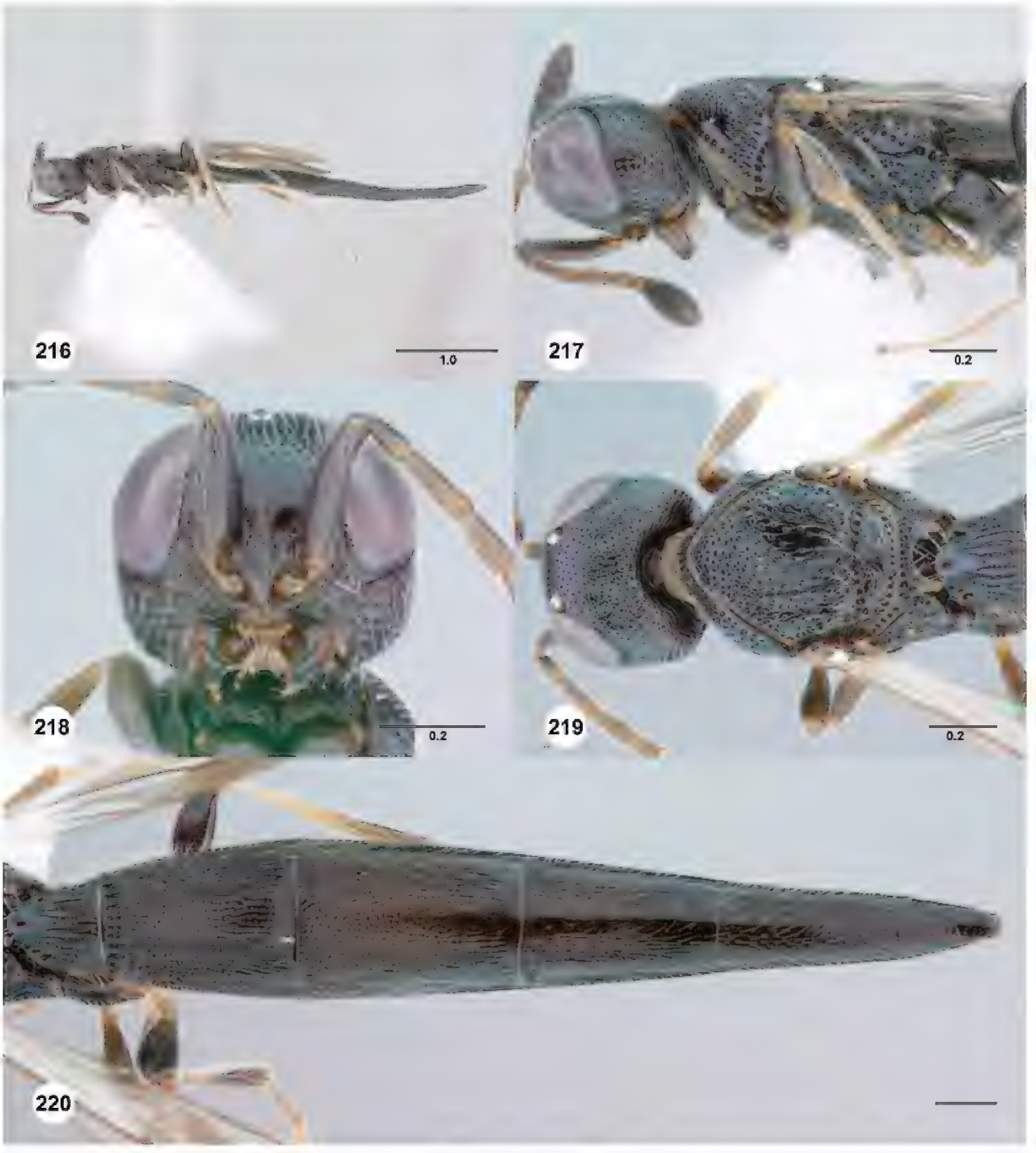
***Trichoteleia prolixa* Talamas, sp. n.**
urn:lsid:zoobank.org:act:94B84B17-EA48-4A3C-95A4-D1BF227C9477
urn:lsid:biosci.ohio-state.edu:osuc_concepts:253566
Figures 216–220; Morphbank[34]

Description. Female Anterior width of T5: 0.31 mm (n=1). Female body length: 4.55 mm (n=1). Female Length of t5 in female: 0.62 mm (n=1). Female Posteroir width of T5: 0.21 mm (n=1). Color of head: black throughout. Central keel of frons: present, bifurcating ventrally around interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: two. Basal node on mandible: absent. Sculpture of frons below median ocellus: densely punctate throughout. Sculpture of posterior vertex: densely punctate. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: dark brown to black. Sculpture along posterior pronotal sulcus: striate, striae short and poorly defined. Notaulus: smooth furrow incomplete, reaching suprahumeral sulcus as row of punctures. Sculpture of medial mesoscutum: smooth and sparsely punctate posteriorly, densely punctate and transverely rugulose anteriorly. Sculpture of mesoscutellum: smooth medially, sparsely punctate laterally. Sculpture along ventral half of prespecular sulcus: coarsely punctate. Sculpture of posterolateral mesepisternum: coarsely punctate. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex. Color of legs: coxae and femora dark brown, trochanters, tibiae and tarsi pale brown to yellow.

Color of metasoma in female: dark brown to black throughout. Posterior margin of transverse sulcus on T2: weakly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: present. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally strigose throughout. Macrosculpture of medial T3 in female: rugulose. Macrosculpture of lateral T3 in female: longitudinally strigose. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: longitudinally strigose. Punctation of T4 in female: sparse in medial third, moderately dense laterally. Macrosculpture of T5 in female: absent. Punctation of T5 in female: moderately dense throughout. Shape of T5 in female: width of posterior margin less than length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth with fine setigerous punctures laterally. Sculpture of S2: coarsely punctate throughout. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: hyaline with infuscate patch anad of R. Color of hind



Figures 216–220.[103] *Trichoteleia prolixa* sp. n., female holotype (OSUC 254609). **216** Lateral habitus **217** Head and mesosoma, lateral view **218** head, anterior view **219** Head and mesosoma, dorsal view **220** Metasoma, dorsal view. Scale bars in millimeters.

wing: hyaline throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. The combination of a conspicuously elongate metasoma and bidentate mandibles renders this species rather straightforward to identify.

Etymology. The adjectival epithet *prolixa*, meaning "stretched out" or "long" in Latin, refers to the length of the metasoma in this species.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=253566]

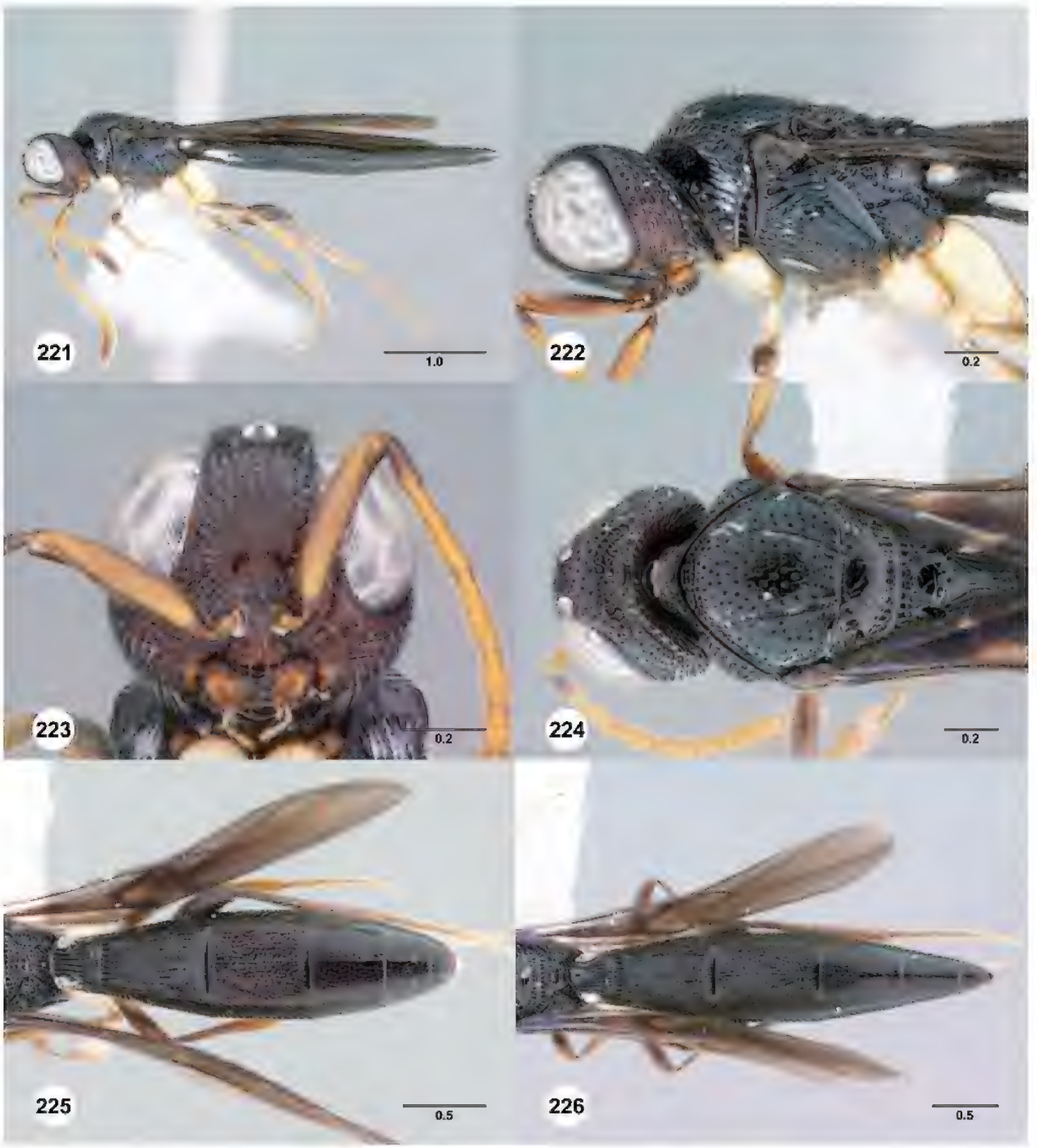
Material Examined. Holotype, female: **MADAGASCAR:** Mahajanga Auto. Prov., Belambo Commune, 20km NW Boriziny (Port-Bergé), secondary growth / white sand, MG-33-01, Ambovomamy, 15°27.07'S 47°36.80'E, 33m, 4.I–14.I.2007, malaise trap, R. Harin'Hala, M. Irwin & F. Parker, OSUC 254609 (deposited in CASC).

***Trichoteleia quazii* Talamas, sp. n.**
urn:lsid:zoobank.org:act:66A7D751-B50A-4EB0-99CA-437B503B34FF
urn:lsid.biosci.ohio-state.edu:osuc_concepts:241270
Figures 32, 221–226; Morphbank[35]

Description. Female body length: 4.74–5.08 mm (n=4). Male body length: 4.07 mm (n=1). Color of head: dark brown to black. Central keel of frons: present, bifurcating ventrally around interantennal process. Sculpture of medial frons in female: smooth. Sculpture of medial frons in male: smooth. Number of mandibular teeth: three. Basal node on mandible: absent. Sculpture of frons below median ocellus: densely punctate throughout. Sculpture of posterior vertex: densely punctate. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: punctate rugose; dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: dark brown to black. Color of mesosoma in male: dark brown to black. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: smooth furrow incomplete, reaching suprahumeral sulcus as row of punctures. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth medially, sparsely punctate laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: punctate. Sculpture of posterolateral mesepisternum: punctate. Sculpture of ventral surface of mesepisternum: finely punctate. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex. Color of legs: coxae and trochanters yellow, otherwise brown, becoming paler distally.

Color of metasoma in female: dark brown to black throughout. Color of metasoma in male: dark brown to black throughout. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: present. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally strigose throughout. Macrosculpture of medial T3 in female: reticulate rugose. Macrosculpture of lateral T3 in female: longitudinally strigose. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: absent; weakly rugulose. Punctation of T4 in female: dense throughout; sparse along midline, otherwise dense. Macrosculpture of T5 in female: absent. Punctation of T5 in female: dense throughout. Shape of T5 in female: width of posterior margin less than length. Microscupture on T6 in female: present along anterior margin. Sculpture of T6 in female: densely and finely



Figures 221–226.[104] *Trichoteleia quazii* sp. n. **221** Lateral habitus, female holotype (CASENT 2132026) **222** Head and mesosoma, lateral view, female holotype (CASENT 2132026) **223** Head, anterior view, female holotype (CASENT 2132026) **224** Head and mesosoma, dorsal view, female holotype (CASENT 2132026) **225** Metasoma, dorsal view, male (CASENT 2043792) **226** Metasoma, dorsal view, female (CASENT 2043798). Scale bars in millimeters.

punctate. Macrosculpture of T2 in male: longitudinally strigose. Macrosculpture of medial T3 in male: weakly rugulose. Macrosculpture of lateral T3 in male: longitudinally strigose. Macrosculpture of T4 in male: absent. Punctation of T4 in male: sparse along midline, otherwise dense. Macrosculpture of T5 in male: absent. Punctation of T5 in male: sparse along midline, otherwise dense throughout. Sculpture of S2: coarsely punctate throughout. Prominent longitudinal median carina on S2: present.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: infuscate throughout with metallic purple sheen along veins. Color of forewing in male: infuscate throughout with metallic purple sheen along veins. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia quazii* is similar to *T. longiventris* and *T. carinata* in the elongate shape and dark color of the body. *T. quazii* shares metallic purple sheen along the forewing veins with *T. longiventris*; the presence of a longitudinal medial carina on S2 in *T. quazii* (as in Fig. 45)separates it. *Trichoteleia carinata* bears a prominent longitudinal carina on lateral T2 (Fig. 84); *T. quazii* does not.

Etymology. *Trichoteleia quazii* is named for James R. Quazi (USA), a friend of the first author, to commemorate his wedding to Inga Sheffield (Mexico).

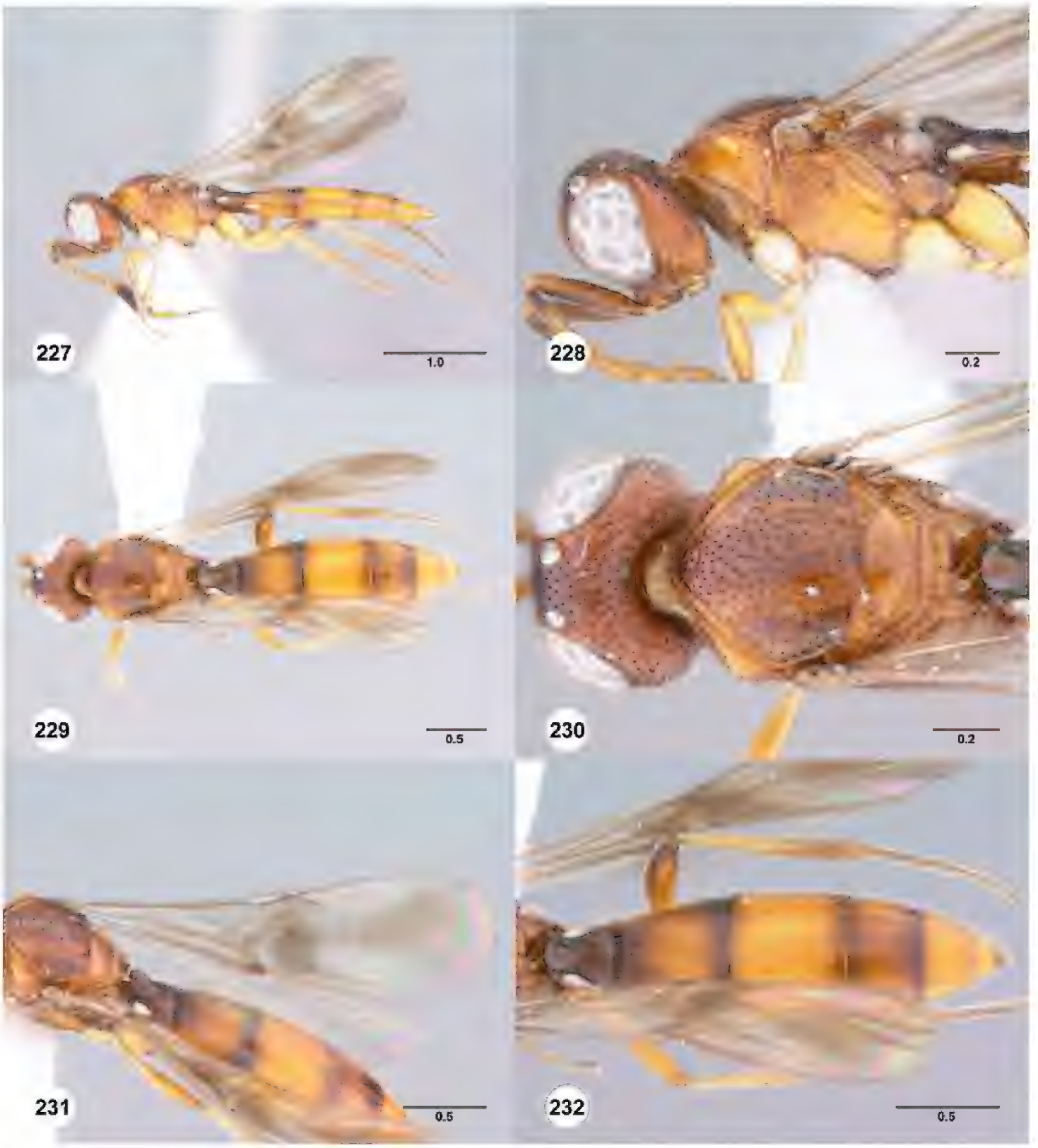
Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=241270]

Material Examined. Holotype, female: **MADAGASCAR:** Fianarantsoa Auto. Prov., radio tower, forest edge / mixed tropical forest, MA-02-09B-61, Ranomafana National Park, 21°15.05'S 47°24.43'E, 1130m, 17.V–30.V.2003, malaise trap, R. Harin'Hala, CASENT 2132026 (deposited in CASC). Paratypes: **MADAGASCAR:** 3 females, 1 male, CASENT 2043792, 2043798, 2134082 (CASC); CASENT 2043941 (OSUC).

Trichoteleia ravaka **Talamas & Masner, sp. n.**
urn:lsid:zoobank.org:act:BAC8D487-65B7-4F9E-B133-344C541A2CF5
urn:lsid.biosci.ohio-state.edu:osuc_concepts:249112
Figures 227–232; Morphbank[36]

Description. Female body length: 3.72 mm (n=1). Color of head: dark orange, becoming brown at vertex. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: absent. Sculpture of frons below median ocellus: densely punctate throughout. Sculpture of posterior vertex: moderately punctate. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: variably orange to brown. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: smooth furrow incomplete, reaching suprahumeral sulcus as row of punctures. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth with sparse fine punctures throughout. Postacetabular sulcus: comprised of small cells. Mesopleural carina: absent. Sculpture along ventral half of prespecular sulcus: punctate. Sculpture of posterolateral mesepisternum: smooth except for 1 or 2 rows of fine punctures parallel to mesopleural carina. Sculpture of ventral



Figures 227–232.[105] *Trichoteleia ravaka* sp. n., female holotype (CASENT 2135788). **227** Lateral habitus **228** Head and mesosoma, lateral view **229** Dorsal habitus **230** Head and mesosoma, dorsal view **231** Fore and hind wing, dorsal view **232** Metasoma, dorsal view. Scale bars in millimeters.

surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: rugulose. Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex. Color of legs: apical hind femur and tibia, all tarsi brown, legs otherwise yellow.

Color of metasoma in female: T1, junctions of tergites brown, otherwise orange. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: present. Horn on T1 in female: present as a large, apically rounded

protuberance. Macrosculpture of T2 in female: longitudinally striate throughout. Macrosculpture of medial T3 in female: longitudinally strigose. Macrosculpture of lateral T3 in female: longitudinally strigose. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: weakly longitudinally strigose. Punctation of T4 in female: sparse throughout. Macrosculpture of T5 in female: absent. Punctation of T5 in female: sparse throughout. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: finely punctate throughout. Sculpture of S2: longitudinally striate anteriorly, smooth posteriorly. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: infuscate in apical two-thirds, with white patches along anterior and posterior margins. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. This species is similar to *T. hemlyae* and *T. pauliani*. It differs from *T. pauliani* by having a central keel (as in Figs 3, 130) and a punctate to rugulose metapleural triangle (Fig. 228), and from *T. hemlyae* by the presence of banding in the forewing (Fig. 231). Color patterns of the body in this species group are particularly plastic and should be avoided during identification.

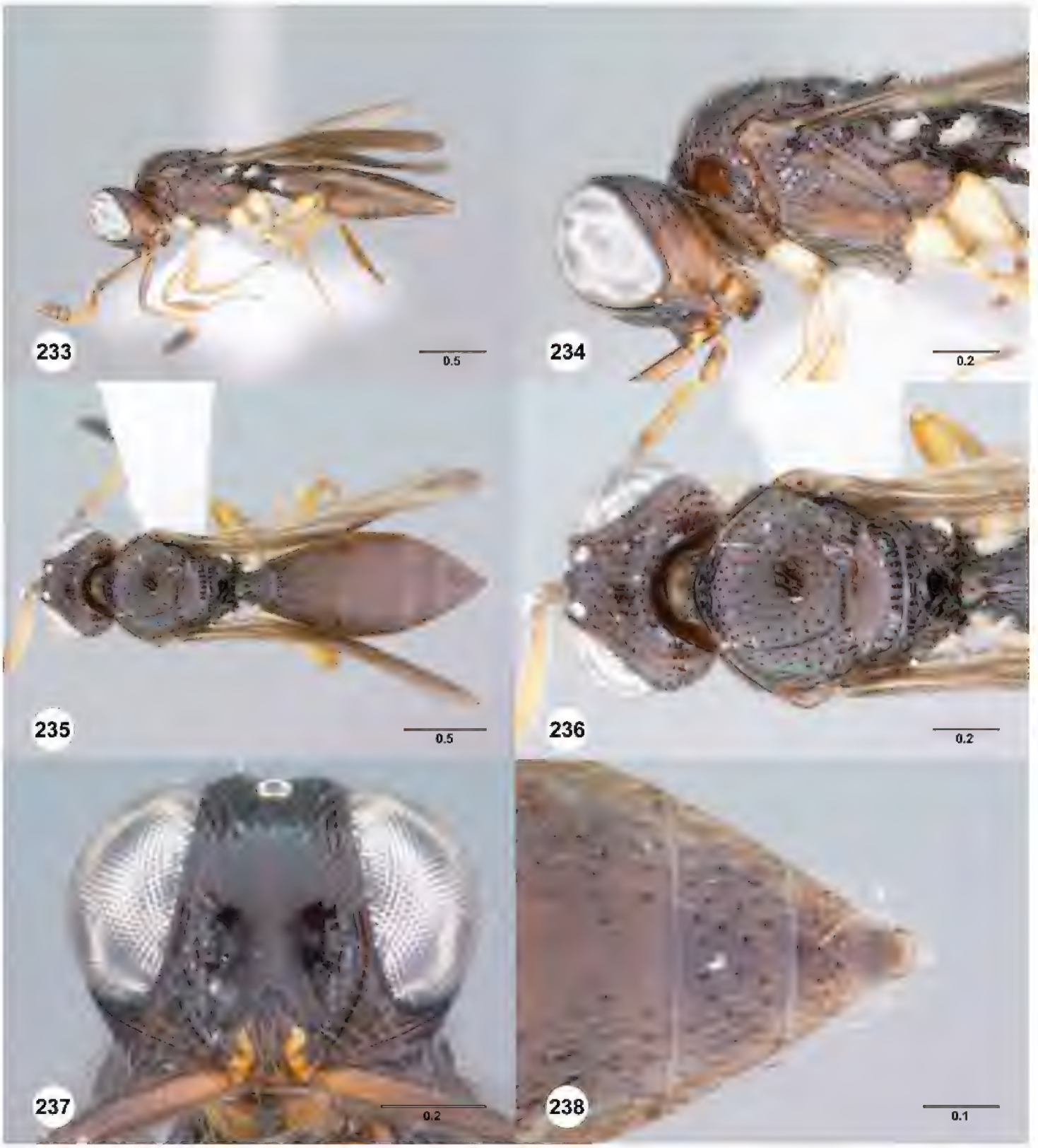
Etymology. The word *ravaka* means "jewel" in Malagasy and is used as a noun in apposition in reference to the beauty and rarity of this species.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=249112]

Material Examined. Holotype, female: **MADAGASCAR:** Toamasina Auto. Prov., botanical garden nr. entrance, tropical forest, MA-01-08B-15, Mantadia (Andasibe) National Park, 18°55.58'S 48°24.47'E, 1025m, 8.X–16.X.2001, malaise trap, R. Harin'Hala, CASENT 2135788 (deposited in CASC).

***Trichoteleia rugifrons* Talamas & Masner, sp. n.**
urn:lsid:zoobank.org:act:03916211-7889-4831-A70C-6EAF97AE9794
urn:lsid:biosci.ohio-state.edu:osuc_concepts:238242
Figures 39, 233–238; Morphbank[37]

Description. Female body length: 2.45–3.26 mm (n=18). Male body length: 2.65–2.92 mm (n=14). Color of head: dark brown to black. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Sculpture of medial frons in male: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: finely punctate throughout, dorsoventrally strigose laterally; dorsoventrally strigose throughout. Sculpture of posterior vertex: moderately punctate, rugose posterior to eyes and posterior ocellus. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: absent.



Figures 233–238.[106] *Trichoteleia rugifrons* sp. n. **233** Lateral habitus, female (CASENT 2118419) **234** Head and mesosoma, lateral view, female (CASENT 2118419) **235** Dorsal habitus, female (CASENT 2118419) **236** Head and mesosoma, dorsal view, female (CASENT 2118419) **237** Head, anterior view, female (CASENT 2042871) **238** T5–T6, dorsal view, female (CASENT 2118419). Scale bars in millimeters.

Color of mesosoma in female: dark brown to black; reddish brown throughout. Color of mesosoma in male: dark brown to black. Sculpture along posterior pronotal sulcus: striate, striae well defined; striate, striae short and poorly defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth with sparse fine punctures throughout; smooth medially,

coarsely punctate laterally; smooth medially, sparsely punctate laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: coarsely punctate. Sculpture of posterolateral mesepisternum: smooth. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle: with blunt kink near intersection with metapleural sulcus. Color of legs: yellow throughout.

Color of metasoma in female: dark brown to black throughout; reddish brown. Color of metasoma in male: pale to dark brown throughout; reddish brown. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: absent. Microsculpture on T3: absent. Microsculpture on T4: absent. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally striate throughout. Macrosculpture of medial T3 in female: weakly longitudinally striate; absent; longitudinally striate. Macrosculpture of lateral T3 in female: longitudinally striate. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: punctate rugulose; longitudinally strigose. Punctation of T4 in female: absent in medial third, moderately dense laterally. Macrosculpture of T5 in female: punctate rugulose throughout; punctate rugulose laterally. Punctation of T5 in female: moderately dense throughout; absent along midline, otherwise moderately dense. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: punctate rugulose. Macrosculpture of T2 in male: longitudinally striate throughout. Macrosculpture of medial T3 in male: longitudinally striate. Macrosculpture of lateral T3 in male: longitudinally striate. Macrosculpture of T4 in male: longitudinally strigose laterally; punctate rugulose laterally. Punctation of T4 in male: sparse in medial third, moderately dense laterally; sparse throughout; absent in medial third, sparse laterally. Macrosculpture of T5 in male: punctate crenulate. Punctation of T5 in male: absent along midline, otherwise moderately dense throughout. Sculpture of S2: longitudinally striate medially with sparse fine punctation. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: infuscate throughout; slightly infuscate throughout. Color of forewing in male: slightly infuscate throughout. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. This species is most similar to *T. solocis* and *T. warreni*. *Trichoteleia warreni* has evenly striate sculpture immediately below the median ocellus (Fig. 291), whereas the striae in *T. rugifrons* and *T. solocis* attenuate medially. *Trichoteleia solocis* is entirely yellow and has weak rugae laterad of the median ocellus (Fig. 243). In *T. rugifrons* the rugae laterad of the median ocellus are prominent (Fig. 237) and the specimens are brown to black.

Etymology. The name *rugifrons,* a noun in apposition, refers to the coarse sculpture of the upper frons.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=238242]

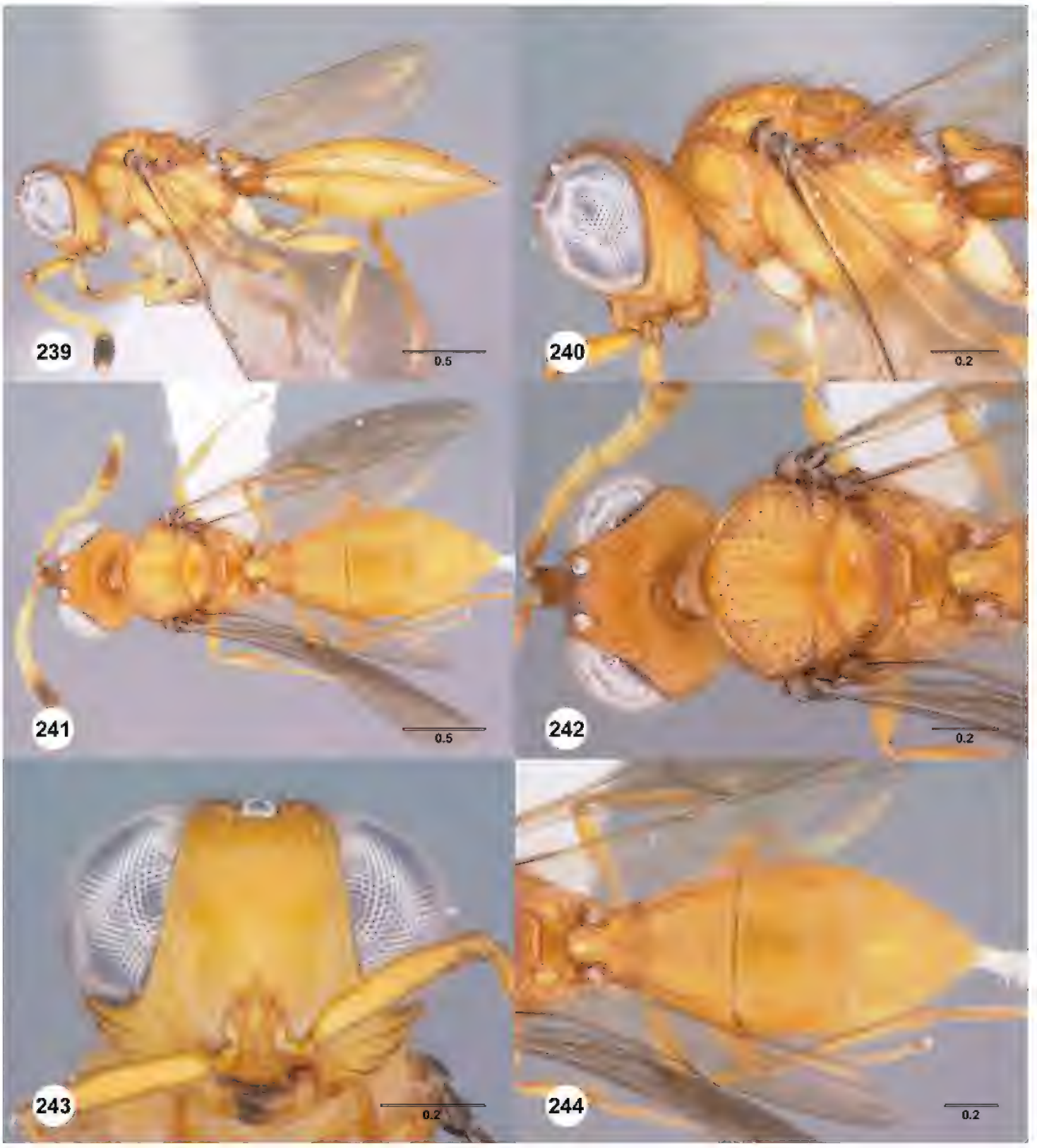
Material Examined. Holotype, female: **MADAGASCAR:** Fianarantsoa Auto. Prov., rainforest, 7km W Ranomafana, 21°16'S 47°25'E, 1000m, 10.IX–22.IX.1993, pan trap, W. Steiner, OSUC 181042 (deposited in CNCI). Paratypes: **MADAGASCAR:** 18 females, 14 males, CASENT 2042871, 2118419, 2134777, 2135938–2135939, 2135945–2135946, 2135952–2135953, 2135955, 2135957, 2136015, 2136162, 2137894, OSUC 181039 (CASC); OSUC 181045, 181048–181049 (CNCI); CASENT 2135760, 2135940, 2135958, 2136157 (OSUC); OSUC 181040–181041, 181043–181044, 181047, 181050, 223959–223960, 241855, 241857 (USNM). Other material: **MADAGASCAR:** 1 male, 1 unknown, OSUC 265214, 266092 (OSUC).

***Trichoteleia solocis* Talamas, sp. n.**
urn:lsid:zoobank.org:act:0E94B844-AD89-4400-A11D-16EAB505E4B4
urn:lsid.biosci.ohio-state.edu:osuc_concepts:248829
Figures 239–244; Morphbank[38]

Description. Female body length: 2.90–3.02 mm (n=2). Color of head: yellow throughout. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: finely punctate throughout, dorsoventrally strigose laterally. Sculpture of posterior vertex: moderately punctate. Occipital rim: comprised of small to miniscule cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: yellow throughout. Sculpture along posterior pronotal sulcus: striate, striae short and poorly defined; rugulose. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: moderately punctate throughout. Sculpture of mesoscutellum: smooth medially, sparsely punctate laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: coarsely punctate. Sculpture of posterolateral mesepisternum: smooth. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle: with blunt kink near intersection with metapleural sulcus. Color of legs: yellow throughout.

Color of metasoma in female: yellow. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: absent. Microsculpture on T3: absent. Microsculpture on T4: absent. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally striate throughout. Macrosculpture of medial T3 in female: longitu-



Figures 239–244.[107] *Trichoteleia solocis* sp. n. **239** Lateral habitus, female (CASENT 2135949) **240** Head and mesosoma, lateral view, female (CASENT 2135949) **241** Dorsal habitus, female holotype (CASENT 2135951) **242** Head and mesosoma, dorsal view, female holotype (CASENT 2135951) **243** Head, anterior view, female (CASENT 2135949) **244** Metasoma, dorsal view, female holotype (CASENT 2135951). Scale bars in millimeters. Scale bars in millimeters.

dinally striate. Macrosculpture of lateral T3 in female: longitudinally striate. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: longitudinally strigose. Punctation of T4 in female: absent along midline, otherwise sparse. Macrosculpture of T5 in female: punctate rugulose laterally. Punctation of T5 in female: absent along midline, otherwise moderately dense. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in

female: absent. Sculpture of T6 in female: moderately punctate throughout. Sculpture of S2: longitudinally striate anteromedially, otherwise smooth. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: slightly infuscate throughout. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. This species is most similar to *T. rugifrons* and *T. warreni*. It may be separated from *T. warreni* by the smooth frons immediately below the median ocellus (Fig. 243) and from *T. rugifrons* by its yellow color and weak rugae laterad of the median ocellus (Fig. 243).

Etymology. The adjectival epithet *solocis*, meaning "coarse" or "rough" in Latin, refers to the sculpture of T6 in females of this species.

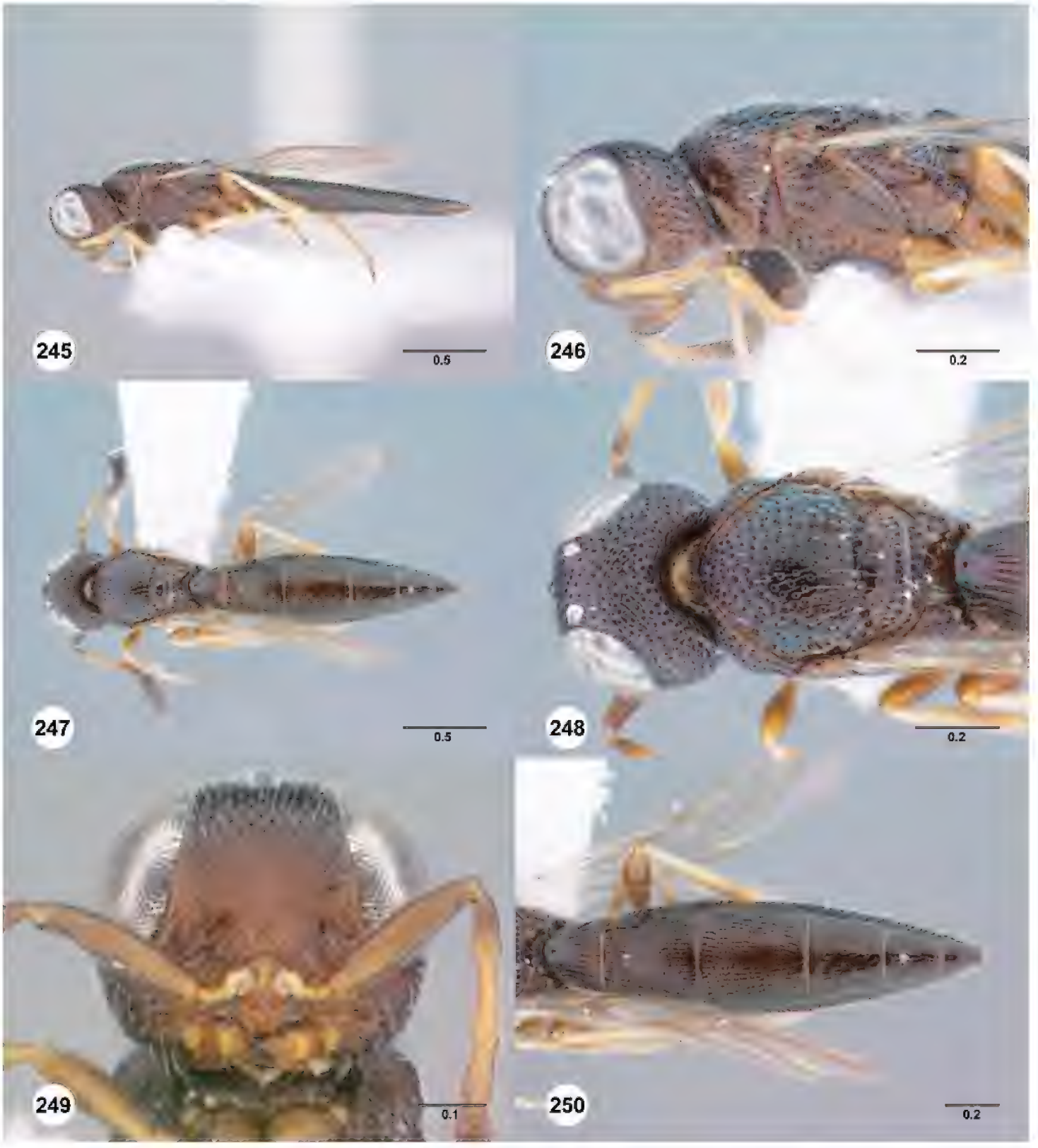
Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=248829]

Material Examined. Holotype, female: **MADAGASCAR:** Toamasina Auto. Prov., 18km (21°) NNE Ambinanitelo, rainforest, BLF8003, Mount Anjanaharibe, 15°11'18"S 49°36'54"E, 450m, 8.III–12.III.2003, pitfall trap, Fisher, Griswold et al., CASENT 2136151 (deposited in CASC). Paratype: **MADAGASCAR:** 1 female, CASENT 2135949 (CASC).

***Trichoteleia sphaerica* Talamas, sp. n.**
urn:lsid:zoobank.org:act:038D912F-CFA7-4804-89AE-23C3B2DA2C22
urn:lsid.biosci.ohio-state.edu:osuc_concepts:243954
Figures 245–250; Morphbank[39]

Description. Female body length: 2.61 mm (n=1). Color of head: reddish brown. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: absent. Sculpture of frons below median ocellus: densely punctate throughout. Sculpture of posterior vertex: densely punctate. Occipital rim: comprised of small to miniscule cells. Sculpture of gena: punctate rugose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: reddish brown throughout. Sculpture along posterior pronotal sulcus: rugulose. Notaulus: smooth furrow incomplete, reaching suprahumeral sulcus as row of punctures. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser and transversely rugulose anteriorly. Sculpture of mesoscutellum: smooth medially, sparsely punctate laterally. Mesopleural carina: present only in anterior half. Sculpture along ventral half of prespecular sulcus: coarsely punctate. Sculpture of posterolateral mesepisternum: coarsely punctate. Setation of ventral metapleural area: absent. Setation of metapleural triangle: moderately dense. Sculpture of metapleural triangle: punctate rugose. Posterior margin of meta-



Figures 245–250.[108] *Trichoteleia sphaerica* sp. n., female holotype (CASENT 2135723). **245** Lateral habitus **246** Head and mesosoma, lateral view **247** Dorsal habitus **248** Head and mesosoma, dorsal view **249** Head, anterior view **250** Metasoma, dorsal view. Scale bars in millimeters.

pleuron below propodeal spiracle: straight to moderately convex. Color of legs: pale brown throughout.

Color of metasoma in female: reddish brown. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: present. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally strigose throughout. Macrosculpture of medial T3 in female: weakly longitudinally strigose. Macrosculpture of lateral T3 in female: longitudinally

strigose. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: weakly rugulose. Punctation of T4 in female: moderately dense throughout. Macrosculpture of T5 in female: absent. Punctation of T5 in female: moderately dense throughout. Shape of T5 in female: width of posterior margin less than length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth with sparse fine setigerous punctures throughout. Sculpture of S2: coarsely punctate throughout. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: hyaline throughout. Color of hind wing: hyaline throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: spectral.

Diagnosis. *Trichoteleia sphaerica* resembles *T. bicolor* in shape of the body but can be distinguished easily by its entirely hyaline forewings.

Etymology. This species is named for the roughly spherical shape of its head. The epithet is considered an adjective.

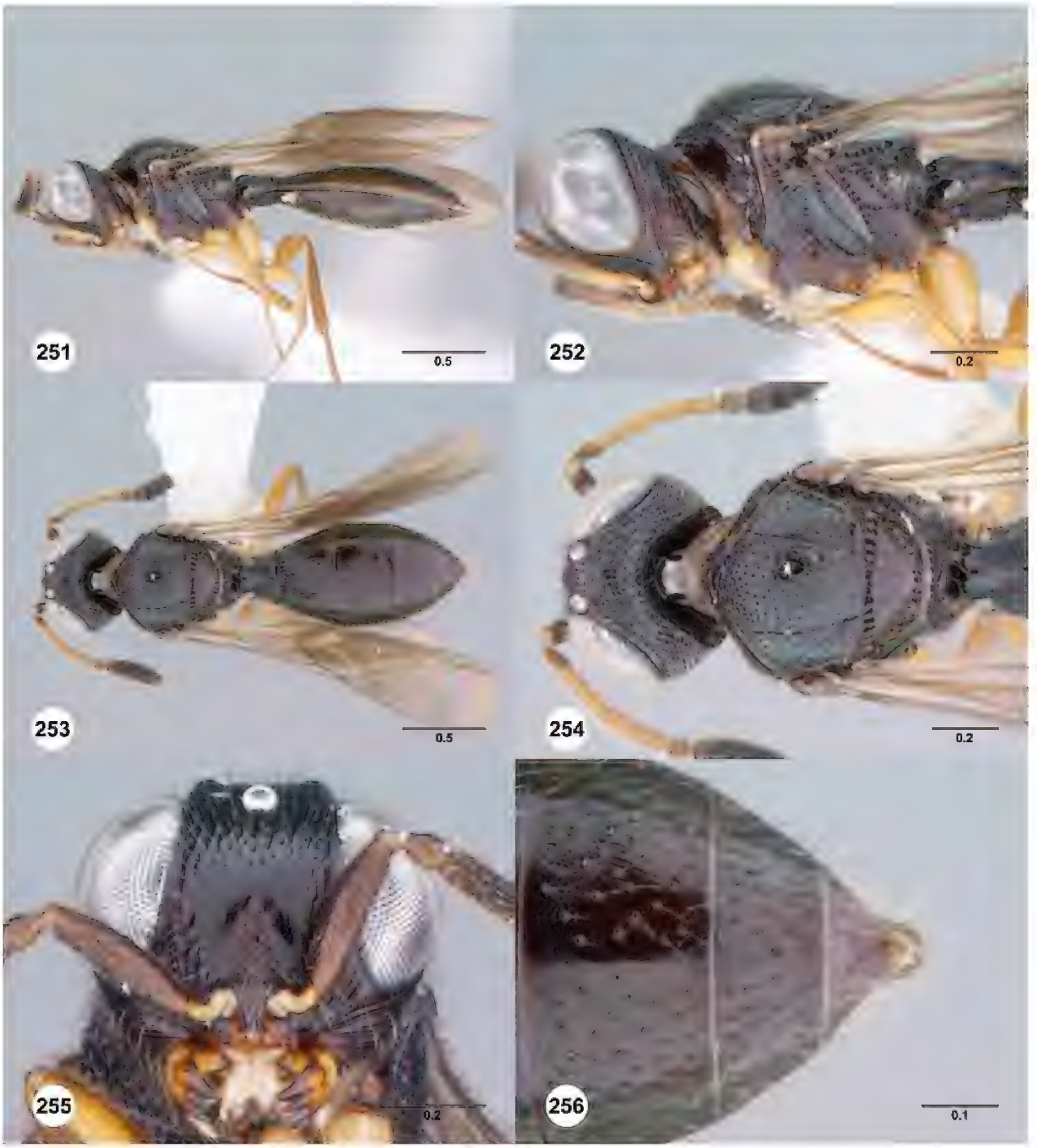
Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=243954]

Material Examined. Holotype, female: **MADAGASCAR:** Mahajanga Auto. Prov., 12.4km (337°) NNW Soalala, tropical dry forest, Baie de Baly National Park, 16°00'36"S 45°15'54"E, 10m, 26.XI–30.XI.2002, yellow pan trap, Fisher, Griswold et al., CASENT 2135723 (deposited in CASC).

Trichoteleia subtilis **Talamas & Masner, sp. n.**
urn:lsid:zoobank.org:act:AFC56042-5B79-42EF-B019-8410FACF5473
urn:lsid.biosci.ohio-state.edu:osuc_concepts:24340
Figures 5, 251–256; Morphbank[40]

Description. Female body length: 2.22–3.32 mm (n=7). Male body length: 2.05–2.44 mm (n=20). Color of head: dark brown to black. Central keel of frons: present, bifurcating ventrally around interantennal process. Sculpture of medial frons in female: smooth. Sculpture of medial frons in male: smooth. Number of mandibular teeth: three. Basal node on mandible: absent. Sculpture of frons below median ocellus: dorsoventrally strigose throughout; densely punctate throughout. Sculpture of posterior vertex: moderately punctate; densely punctate; rugulose with faint concentric tendency. Occipital rim: comprised of small to miniscule cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: dark brown to black. Color of mesosoma in male: dark brown to black. Sculpture along posterior pronotal sulcus: striate, striae well defined; striate, striae short and poorly defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: smooth and sparsely punctate posteriorly, densely punctate and transverely rugulose anteriorly; moderately punctate in posterior half, becoming denser anteriorly. Sculpture



Figures 251–256.[109] *Trichoteleia subtilis* sp. n. **251** Lateral habitus, female (OSUC 237786) **252** Head and mesosoma, lateral view, female (OSUC 237786) **253** Dorsal habitus, female (OSUC 237786) **254** Head and mesosoma, dorsal view, female (OSUC 237786) **255** Head, anterior view, male (CASENT 2134187) **256** Metasoma, dorsal view, female (OSUC 237786). Scale bars in millimeters.

of mesoscutellum: smooth with sparse fine punctures throughout; smooth medially, sparsely punctate laterally. Postacetabular sulcus: present as a smooth furrow. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: punctate rugose; weakly rugulose. Sculpture of posterolateral mesepisternum: smooth. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle:

with blunt kink near intersection with metapleural sulcus. Color of legs: yellow throughout; brown throughout.

Color of metasoma in female: dark brown to black throughout. Color of metasoma in male: dark brown to black throughout. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: absent. Microsculpture on T3: absent. Microsculpture on T4: absent. Horn on T1 in female: absent; present as a small bulge. Macrosculpture of T2 in female: longitudinally striate throughout. Macrosculpture of medial T3 in female: weakly longitudinally striate; absent. Macrosculpture of lateral T3 in female: weakly longitudinally striate; absent. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: absent. Punctation of T4 in female: moderately dense throughout; absent along midline, otherwise sparse; absent along midline, otherwise moderately dense. Macrosculpture of T5 in female: absent. Punctation of T5 in female: moderately dense throughout; sparse throughout. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth with fine setigerous punctures laterally. Macrosculpture of T2 in male: longitudinally striate throughout. Macrosculpture of medial T3 in male: absent; weakly longitudinally striate. Macrosculpture of lateral T3 in male: absent; weakly longitudinally striate. Macrosculpture of T4 in male: absent. Punctation of T4 in male: sparse throughout; absent along midline, otherwise sparse. Macrosculpture of T5 in male: absent. Punctation of T5 in male: moderately dense throughout; sparsely present throughout. Sculpture of S2: longitudinally striate throughout; longitudinally striate anteromedially, otherwise smooth. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: slightly infuscate throughout. Color of forewing in male: slightly infuscate throughout. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia subtilis* is best identified by the fine striation of the gena, the absence of a basal node on the mandible, and the ventrally bifurcating central keel on the frons. T3–T4 are typically smooth, but some specimens bear faint striation on T3.

Etymology. The Latin adjectival epithet *subtilis* refers to the fine striation of the gena.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=243406]

Material Examined. Holotype, female: **MADAGASCAR:** Fianarantsoa Auto. Prov., Bell Vue Trail, tropical forest, Ranomafana National Park, 1000m, 12.XII–21. XII.1999, malaise trap, M. E. Irwin & E. I. Schlinger, OSUC 237786 (deposited in CASC). Paratypes: **MADAGASCAR:** 6 females, 33 males, CASENT 2043434, 2118411, 2134158, 2134173, 2134187, 2135761, 2135779–2135781, 2135798, 2135821, 2135830, 2135870, 2135874, 2135878, 2136121, 2136161, 2136183, 8106464 (CASC); OSUC 181052–181053, 181055–181059, 181064, 181067–181068 (CNCI); CASENT 2042843, 2043799, 2118410, 2135833, 2135871, 2136061, 2136181, 2136186 (OSUC); OSUC 241854, 241856 (USNM).

Comments. This species varies in the definition of the striae on the vertex and below the median ocellus. Some specimens have well-defined striae, and others have primarily punctate sculpture with only a trace of striation.

Trichoteleia tahotra Talamas & Masner, sp. n.

urn:lsid:zoobank.org:act:550240E6-EDA5-4C17-B954-D4F88DCC2816
urn:lsid.biosci.ohio-state.edu:osuc_concepts:241271
Figures 16, 19, 25, 36, 257–262; Morphbank[41]

Description. Female body length: 2.96–3.48 mm (n=8). Male body length: 2.71–3.28 mm (n=16). Color of head: dark brown to black. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Sculpture of medial frons in male: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: moderately punctate throughout; punctate throughout with a groove parallel to orbital carina; finely punctate throughout. Sculpture of posterior vertex: moderately punctate; punctate rugulose; finely punctate. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: present.

Color of mesosoma in female: variably orange to brown; reddish brown throughout. Color of mesosoma in male: pale brown throughout; dark brown to black. Sculpture along posterior pronotal sulcus: striate, striae short and poorly defined; rugulose. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: mostly smooth with few punctures, punctures denser anteriorly; smooth and sparsely punctate posteriorly, densely punctate and transverely rugulose anteriorly; longitudinally rugulose posteriorly, transversely rugulose anteriorly; moderately punctate in posterior half, becoming denser anteriorly; sparsely punctate, becoming denser anteriorly. Sculpture of mesoscutellum: smooth with sparse fine punctures throughout; smooth medially, coarsely punctate laterally; smooth medially, moderately punctate laterally. Postacetabular sulcus: present as a smooth furrow. Mesopleural carina: present only in anterior half. Sculpture along ventral half of prespecular sulcus: weakly rugulose. Sculpture of posterolateral mesepisternum: smooth. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: rugulose; punctate rugose. Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex; with blunt kink near intersection with metapleural sulcus. Color of legs: yellow throughout; pale brown throughout.

Color of metasoma in female: dark brown to black throughout. Color of metasoma in male: pale to dark brown throughout; dark brown to black throughout. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: absent; present. Microsculpture on T3: absent; present. Microsculpture on T4: absent; present. Horn on T1 in female: absent. Macrosculpture of T2 in female: longitudinally striate throughout. Macrosculpture of medial T3 in female: weak-

Figures 257–262.[110] *Trichoteleia tahotra* sp. n. **257** Lateral habitus, female (CASENT 2136058) **258** Head and mesosoma, lateral view, female (CASENT 2136058) **259** Dorsal habitus, female (CASENT 2136058) **260** Head and mesosoma, dorsal view, female (CASENT 2136058) **261** Head, anterior view, male (CASENT 2134151) **262** Metasoma, dorsal view, female (CASENT 2136058). Scale bars in millimeters.

ly longitudinally striate; longitudinally striate. Macrosculpture of lateral T3 in female: longitudinally striate. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: longitudinally strigose; longitudinally striate. Punctation of T4 in female: sparse laterally and along posterior margin, otherwise absent. Macrosculpture of T5 in female: absent; weakly rugulose laterally. Punctation of T5 in female: sparse throughout. Shape of T5 in female: width of posterior margin greater than or equal to

length. Microscupture on T6 in female: absent. Sculpture of T6 in female: moderately punctate throughout. Macrosculpture of T2 in male: longitudinally striate throughout. Macrosculpture of medial T3 in male: absent; weakly longitudinally striate. Macrosculpture of lateral T3 in male: longitudinally striate. Macrosculpture of T4 in male: longitudinally strigose laterally; absent. Punctation of T4 in male: sparse laterally and along posterior margin, otherwise absent. Macrosculpture of T5 in male: absent; weakly rugulose laterally. Punctation of T5 in male: sparsely present throughout; absent in medial third, sparse laterally. Sculpture of S2: longitudinally striate throughout; longitudinally strigose throughout, punctate interstitially. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: infuscate throughout; slightly infuscate throughout. Color of forewing in male: slightly infuscate throughout. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: less than 1.5 times as long as rs. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia tahotra* shares the presence of a posterior projection of the propodeum and shape of the lateral propodeal area with *T. oculea*. In addition, R1 (postmarginal vein) in both species is approximately equal in length to r (stigmal vein). It differs from *T. oculea* by the presence of a basiconic sensillum on A7 and in having short rugulae along the posterior margin of the lateral pronotum instead of well-defined striae (Fig. 16).

Etymology. The Malagasy word for "fear", *tahotra*, is given to this species as a noun in apposition in reference to its typically large metascutellar spines.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=241271]

Material Examined. Holotype, female: **MADAGASCAR:** Antsiranana Auto. Prov., Marojejy National Park, 14°06'S 49°46.7'E, 750m, 22.X–19.XI.1996, malaise trap, E. Quinter, OSUC 181002 (deposited in CNCI). Paratypes: **MADAGASCAR:** 7 females, 17 males, CASENT 2043325, 2043340, 2043782, 2043787, 2134151, 2134186, 2134759, 2135842, 2136058, 2136422, 2136571, 2138067, OSUC 181000, OSUC 181009, OSUC 181010, OSUC 181065, OSUC 181066 (CASC); OSUC 181001, 262099 (CNCI); CASENT 2135802, 2135843, 2136187, 2136575, OSUC 215615 (OSUC). Other material: **MADAGASCAR:** 1 male, CASENT 2134733 (CASC).

Comments. This species exhibits variation in color, ranging from pale brown to nearly black, in the length of the metascutellar spines, and in overall body size.

Trichoteleia takariva Talamas, sp. n.

urn:lsid:zoobank.org:act:618B3053-16FC-4790-8E53-75206186C1A9
urn:lsid:biosci.ohio-state.edu:osuc_concepts:244609
Figures 7, 13, 46, 263–268; Morphbank[42]

Description. Male body length: 3.64 mm (n=1). Color of head: dark brown to black. Central keel of frons: present, extending onto interantennal process. Sculpture of me-

Figures 263–268.[111] *Trichoteleia takariva* sp. n., male holotype (CASENT 2043217). **263** Lateral habitus **264** Head and mesosoma, lateral view **265** Metasoma, dorsal view. **266** Head and mesosoma, dorsal view **267** Head, anterior view **268** Gena, posterolateral view. Scale bars in millimeters.

dial frons in male: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: punctate rugulose throughout. Sculpture of posterior vertex: moderately punctate, rugose posterior to eyes and posterior ocellus. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in male: dark brown to black. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: moderately punctate in posterior

half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth medially, moderately punctate laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present only in anterior half. Sculpture along ventral half of prespecular sulcus: punctate. Sculpture of posterolateral mesepisternum: smooth. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle: with blunt kink near intersection with metapleural sulcus. Color of legs: coxae and trochanters yellow, otherwise brown.

Color of metasoma in male: dark brown to black throughout. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: absent. Microsculpture on T3: absent. Microsculpture on T4: absent. Macrosculpture of T2 in male: longitudinally striate throughout. Macrosculpture of medial T3 in male: longitudinally striate. Macrosculpture of lateral T3 in male: longitudinally striate. Macrosculpture of T4 in male: longitudinally strigose laterally. Punctation of T4 in male: absent along midline, otherwise moderately dense throughout. Macrosculpture of T5 in male: absent. Punctation of T5 in male: absent along midline, otherwise moderately dense throughout. Sculpture of S2: longitudinally striate anteriorly, smooth posteriorly. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in male: infuscate throughout. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia takariva* is most similar to males of *T. orona*. *Trichoteleia takariva* lacks a dorsal flange on the interantennal process (Fig. 264) and has moderately dense punctation on T5 (Fig. 265), whereas in *T. orona* the flange is present (Fig. 187) and the punctation of T5 is dense (Fig. 40).

Etymology. The epithet *takariva* means "nightfall" in Malagasy. It is applied to this species because of its black color and dusky wings. The epithet is a noun in apposition.

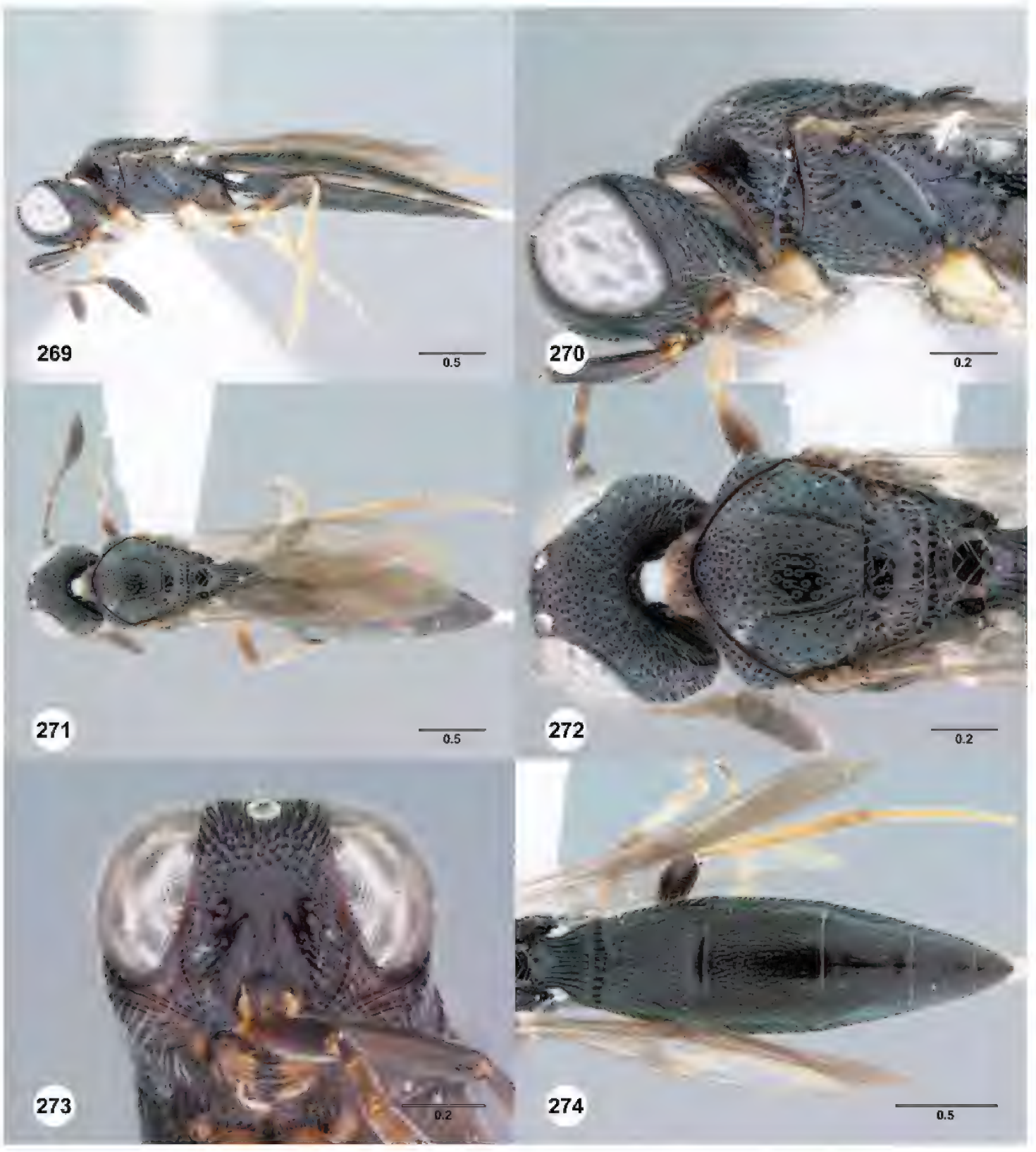
Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=244609]

Material Examined. Holotype, male: **MADAGASCAR:** Toliara Auto. Prov., nr. Bellevue, parcel II, spiny forest, MA-02-14B-05, Bezaha Mahafaly Special Reserve, 23°41.39S 44°34.53E, 180m, 4.XII–11.XII.2001, malaise trap, R. Harin'Hala, CASENT 2043217 (deposited in CASC). Paratype: **MADAGASCAR:** 1 male, CASENT 2137241 (CASC).

Trichoteleia tezitra Talamas, sp. n.

urn:lsid:zoobank.org:act:6D355E62-584A-46F2-B9A9-DBF221D0E1BB
urn:lsid.biosci.ohio-state.edu:osuc_concepts:241273
Figures 269–274; Morphbank[43]

Description. Female body length: 3.67–4.25 mm (n=3). Male body length: 3.56 mm (n=1). Color of head: dark brown to black. Central keel of frons: present, bifurcating



Figures 269–274.[112] *Trichoteleia tezitra* sp. n. **269** Lateral habitus, female (CASENT 2133132) **270** Head and mesosoma, lateral view, female (CASENT 2133132) **271** Dorsal habitus, female (CASENT 2133132) **272** Head and mesosoma, dorsal view, female (CASENT 2133132) **273** Head, anterior view, female (CASENT 2135929) **274** Metasoma, dorsal view, female (CASENT 2133132). Scale bars in millimeters.

ventrally around interantennal process. Sculpture of medial frons in female: smooth. Sculpture of medial frons in male: smooth. Number of mandibular teeth: three. Basal node on mandible: absent. Sculpture of frons below median ocellus: densely punctate throughout. Sculpture of posterior vertex: densely punctate. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: dark brown to black. Color of mesosoma in male: dark brown to black. Sculpture along posterior pronotal sulcus: striate, striae well defined; rugulose. Notaulus: smooth furrow incomplete, reaching suprahumeral sulcus as row of punctures. Sculpture of medial mesoscutum: densely punctate posteriorly, becoming denser and transversely rugulose anteriorly. Sculpture of mesoscutellum: smooth medially, moderately punctate laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: coarsely punctate. Sculpture of posterolateral mesepisternum: coarsely punctate. Sculpture of ventral surface of mesepisternum: finely punctate; moderately punctate. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex; with blunt kink near intersection with metapleural sulcus. Color of legs: femora and metacoxa brown, otherwise yellow.

Color of metasoma in female: dark brown to black throughout. Color of metasoma in male: dark brown to black throughout. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: absent. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally strigose throughout. Macrosculpture of medial T3 in female: absent; longitudinally strigose; rugulose. Macrosculpture of lateral T3 in female: longitudinally strigose. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: absent; weakly rugulose. Punctation of T4 in female: sparse in medial third, dense laterally; absent along midline, otherwise moderately dense. Macrosculpture of T5 in female: absent; weakly rugulose laterally. Punctation of T5 in female: dense throughout; sparse along midline, otherwise dense; absent along midline, otherwise moderately dense. Shape of T5 in female: width of posterior margin less than length. Microscupture on T6 in female: absent. Sculpture of T6 in female: densely and finely punctate. Macrosculpture of T2 in male: longitudinally strigose. Macrosculpture of medial T3 in male: longitudinally strigose. Macrosculpture of lateral T3 in male: longitudinally strigose. Macrosculpture of T4 in male: absent. Punctation of T4 in male: sparse in medial third, dense laterally. Macrosculpture of T5 in male: absent. Punctation of T5 in male: sparse along midline, otherwise dense throughout. Sculpture of S2: coarsely punctate throughout. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: slightly infuscate throughout. Color of forewing in male: slightly infuscate throughout. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: spectral.

Diagnosis. The body shape, color and size of *T. tezitra* is similar to *T. bidentata, T. funesta* and, to a lesser extent, *T. quazii*. S2 in *T. quazii* has a longitudinal median carina (as in Fig. 45), whereas S2 in *T. tezitra* is uniformly punctate with no carina.

Trichoteleia tezitra shares with *T. bidentata* spectral Rs+M and M+Cu veins, and differs in having three, versus two, mandibular teeth.

Etymology. This species is given the name *tezitra*, meaning "angry" in Malagasy, for the appearance of its head. The epithet is to be considered as a noun in apposition.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=241273]

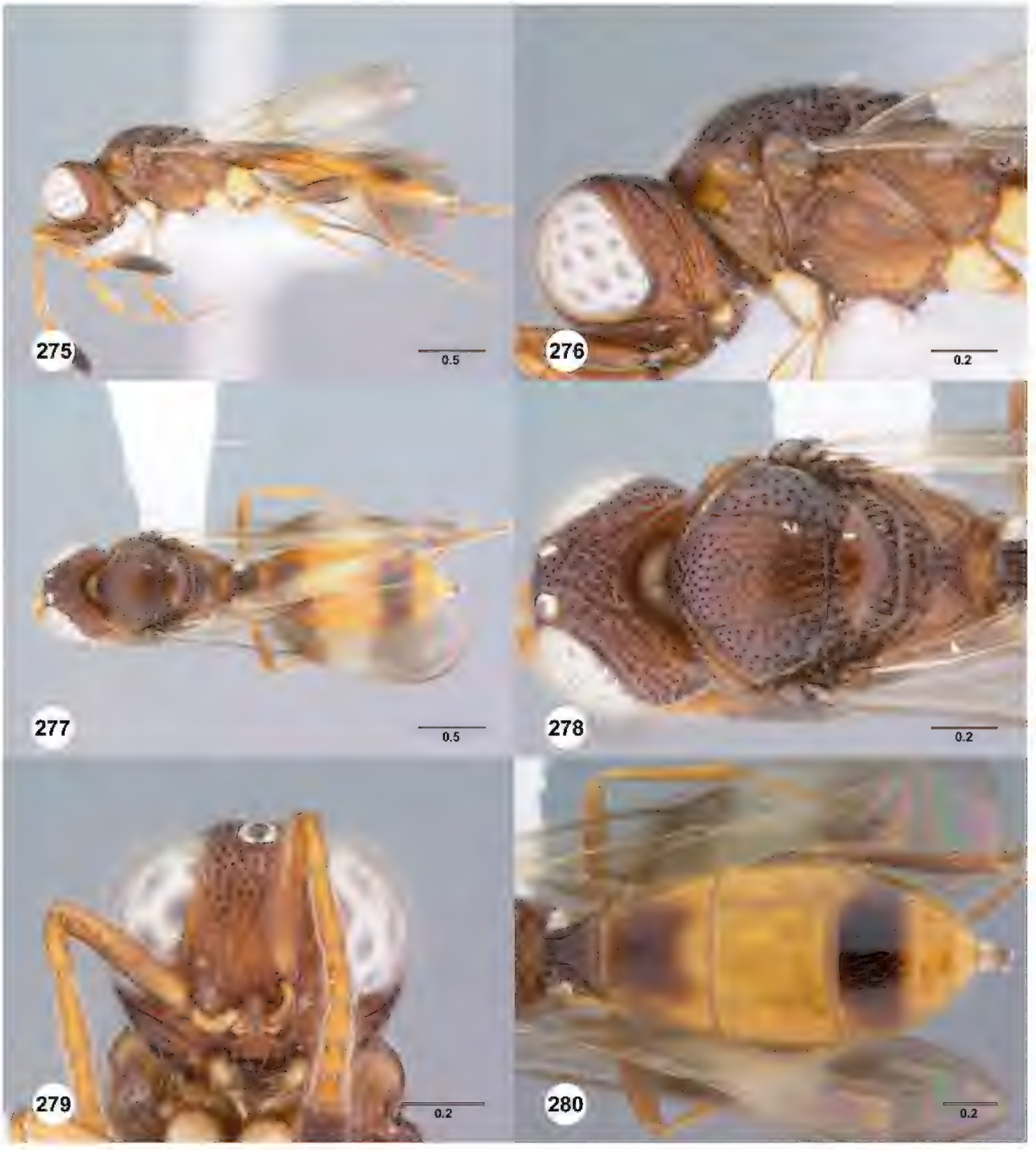
Material Examined. Holotype, female: **MADAGASCAR:** Toliara Auto. Prov., 19.8km (84°) E Sakaraha, leaf mold / rotten wood / tropical dry forest, BLF7510, Zombitse-Vohibasia National Park, 22°50'36"S 44°42'36"E, 770m, 5.II–9.II.2003, sifted litter, Fisher, Griswold et al., CASENT 2136542 (deposited in CASC). Paratypes: **MADAGASCAR:** 3 females, 1 male, CASENT 2133132, 2133135, OSUC 334221 (CASC); CASENT 2135929 (OSUC).

***Trichoteleia tigris* Talamas, sp. n.**
urn:lsid:zoobank.org:act:DD0DBED7-3C5B-4A99-BDD6-DF3531135DC5
urn:lsid.biosci.ohio-state.edu:osuc_concepts:241286
Figures 22, 28, 53–54, 275–280; Morphbank[44]

Description. Female body length: 3.26 mm (n=1). Male body length: 2.65–3.55 mm (n=12). Color of head: pale brown throughout; reddish brown. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: punctate rugulose. Sculpture of medial frons in male: punctate. Number of mandibular teeth: three. Basal node on mandible: absent. Sculpture of frons below median ocellus: punctate rugulose throughout; densely punctate throughout. Sculpture of posterior vertex: punctate rugose. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: punctate rugose; coarsely strigose; dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: variably orange to brown. Color of mesosoma in male: pale brown throughout. Sculpture along posterior pronotal sulcus: striate, striae well defined; striate, striae short and poorly defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: densely punctate throughout; moderately punctate in posterior half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth with few very fine punctures laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: longitudinally striate; coarsely punctate. Sculpture of posterolateral mesepisternum: punctate. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: dense; moderately dense. Sculpture of metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle: with blunt kink near intersection with metapleural sulcus. Color of legs: coxae and trochanters yellow, otherwise pale brown, hindlegs the darkest.

Color of metasoma in female: T1–T2, T4 brown medially, otherwise orange throughout. Color of metasoma in male: pale to dark brown throughout. Posterior



Figures 275–280.[113] *Trichoteleia tigris* sp. n., female holotype (CASENT 2043960). **275** Lateral habitus **276** Head and mesosoma, lateral view **277** Dorsal habitus **278** Head and mesosoma, dorsal view **279** Head, anterior view **280** Metasoma, dorsal view. Scale bars in millimeters.

margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: absent. Horn on T1 in female: absent. Macrosculpture of T2 in female: longitudinally striate throughout. Macrosculpture of medial T3 in female: longitudinally striate. Macrosculpture of lateral T3 in female: longitudinally striate. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: absent. Punctation of T4 in female: absent along midline, otherwise moderately dense. Macrosculpture of T5 in female: absent. Punctation of T5 in female: absent along midline, other-

wise moderately dense. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth with fine setigerous punctures along lateral margin. Macrosculpture of T2 in male: longitudinally striate throughout; weakly longitudinally striate throughout. Macrosculpture of medial T3 in male: longitudinally striate. Macrosculpture of lateral T3 in male: longitudinally striate. Macrosculpture of T4 in male: absent. Punctation of T4 in male: absent along midline, otherwise sparse; absent along midline, otherwise moderately dense throughout. Macrosculpture of T5 in male: absent. Punctation of T5 in male: absent along midline, otherwise moderately dense throughout; absent along midline, otherwise sparse. Sculpture of S2: longitudinally strigose throughout, punctate interstitially. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: hyaline with transverse infuscate bands medially and subapically. Color of forewing in male: slightly infuscate throughout. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: reduced posterior to Sc+R in basal half. Density of setation in hind wing: reduced posterior to Sc+R. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia tigris* is a rather disparate species with unclear affinities. The smooth area present above the interantennal process in other species of *Trichoteleia* is entirely rugulose in the female specimen and mostly rugulose in the male specimens. The coarse punctation and rugosity of the head (Fig. 278), the short, blunt metascutellar points (Fig. 22), banded wings (females only) (Figs 277), and the large, mostly smooth lateral propodeal area (Fig. 28) serve well to the identify this species.

Etymology. The epithet *tigris* refers to the banding pattern of the metasoma in females of this species. The name is used as a noun in apposition.

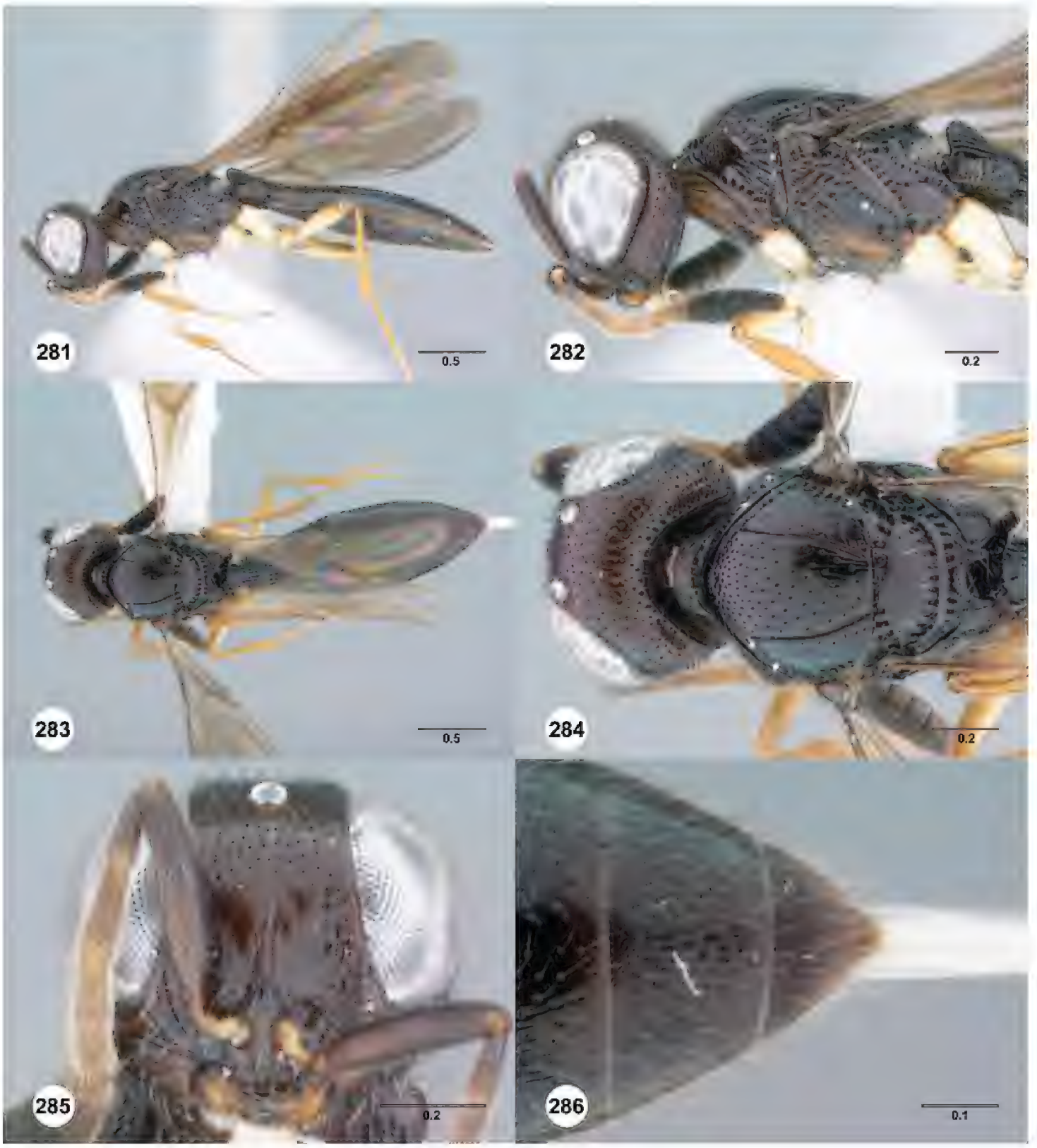
Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=241286]

Material Examined. Holotype, female: **MADAGASCAR:** Fianarantsoa Auto. Prov., radio tower, forest edge / mixed tropical forest, MA-02-09B-53, Ranomafana National Park, 21°15.05'S 47°24.43'E, 1130m, 18.II–27.II.2003, malaise trap, R. Harin'Hala, CASENT 2043960 (deposited in CASC). Paratypes: **MADAGASCAR:** 14 males, CASENT 2135854, 2135960, 2135963, 2135965, 2135969–2135970, 2136013, 2136185, 2137692 (CASC); CASENT 2135972 (CNCI); CASENT 2135820, 2135822, 2135966, OSUC 254610 (OSUC).

Trichoteleia tonsa Talamas & Masner, sp. n.

urn:lsid:zoobank.org:act:C7C17BE8-7410-4767-BB68-E540E35D6E3C
urn:lsid.biosci.ohio-state.edu:osuc_concepts:241292
Figures 281–286; Morphbank[45]

Description. Female body length: 3.26–3.72 mm (n=12). Male body length: 3.36 mm (n=1). Color of head: dark brown to black. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Sculpture of medial frons



Figures 281–286.[114] *Trichoteleia tonsa* sp. n. **281** Lateral habitus, female (CASENT 2042828) **282** Head and mesosoma, lateral view, female (CASENT 2042828) **283** Dorsal habitus, female holotype (CASENT 2042832). **284** Head and mesosoma, dorsal view, female holotype (CASENT 2042832) **285** Head, anterior view, female holotype (CASENT 2042832) **286** T5–T6, dorsal view, female holotype (CASENT 2042832). Scale bars in millimeters.

in male: smooth. Number of mandibular teeth: three. Basal node on mandible: absent. Sculpture of frons below median ocellus: finely punctate throughout. Sculpture of posterior vertex: moderately punctate; finely punctate. Occipital rim: comprised of small to miniscule cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: dark brown to black. Color of mesosoma in male: dark brown to black. Sculpture along posterior pronotal sulcus: striate, striae well de-

fined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth medially, sparsely punctate laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: punctate. Sculpture of posterolateral mesepisternum: smooth. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: absent; sparse. Sculpture of metapleural triangle: smooth. Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex. Color of legs: yellow throughout; coxae, trochanters and femora yellow, otherwise pale to dark brown.

Color of metasoma in female: dark brown to black throughout. Color of metasoma in male: dark brown to black throughout. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: absent. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally striate throughout. Macrosculpture of medial T3 in female: longitudinally striate. Macrosculpture of lateral T3 in female: longitudinally striate. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: longitudinally strigose. Punctation of T4 in female: sparse in medial third, moderately dense laterally; absent along midline, otherwise moderately dense. Macrosculpture of T5 in female: absent; weakly rugulose laterally. Punctation of T5 in female: moderately dense throughout. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: present throughout. Sculpture of T6 in female: finely punctate throughout. Macrosculpture of T2 in male: longitudinally striate throughout. Macrosculpture of medial T3 in male: longitudinally striate. Macrosculpture of lateral T3 in male: longitudinally striate. Macrosculpture of T4 in male: longitudinally strigose laterally. Punctation of T4 in male: sparse throughout. Macrosculpture of T5 in male: weakly rugulose laterally. Punctation of T5 in male: sparsely present throughout. Sculpture of S2: longitudinally striate anteriorly, smooth posteriorly. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: infuscate throughout; slightly infuscate throughout. Color of forewing in male: slightly infuscate throughout. Color of hind wing: infuscate throughout; slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia tonsa* belongs to the cluster of species, also containing *T. levii* and *T. prima*, in which the short striae along the pronotal shoulder and those of the lateral pronotum form a continuous band. Females of *T. tonsa* are separated by the presence of dense microsculpture throughout T6 (Fig. 286), and males by the smooth metapleural triangle (Fig. 282) and posteriorly rounded axillular carina (as in Fig. 11).

Etymology. The epithet *tons*a, meaning "paddle" in Latin, refers to the shape of the forewing in this species. It is used as a noun in apposition.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=241292]

Material Examined. Holotype, female: **MADAGASCAR:** Toamasina Auto. Prov., 18km (21°) NNE Ambinanitelo, rainforest, BLF8004, Mount Anjanaharibe, 15°11'18"S 49°36'54"E, 450m, 8.III–12.III.2003, yellow pan trap, Fisher, Griswold et al., CASENT 2042832 (deposited in CASC). Paratypes: **MADAGASCAR:** 11 females, 1 male, CASENT 2042826, 2042828, 2042864, 2135942, 2135947, 2135950, 2135954, 2135956 (CASC); CASENT 2135951 (CNCI); CASENT 2135941, 2135943, 2135948 (OSUC).

Trichoteleia warreni Talamas & Masner, sp. n.

urn:lsid:zoobank.org:act:4D495022-4B36-4E46-9659-6ED006733AF2
urn:lsid.biosci.ohio-state.edu:osuc_concepts:243938
Figures 287–292; Morphbank[46]

Description. Female body length: 3.29 mm (n=1). Color of head: yellow throughout. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: dorsoventrally strigose throughout. Sculpture of posterior vertex: moderately punctate, rugose posterior to eyes and posterior ocellus. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: dorsoventrally strigose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: variably yellow to brown. Sculpture along posterior pronotal sulcus: striate, striae short and poorly defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth medially, sparsely punctate laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: punctate rugose. Sculpture of posterolateral mesepisternum: smooth. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle: with blunt kink near intersection with metapleural sulcus. Color of legs: yellow throughout.

Color of metasoma in female: T1, S1, medial T2–T6 brown, otherwise yellow. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: absent. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally striate throughout. Macrosculpture of medial T3 in female: longitudinally striate. Macrosculpture of lateral T3 in female: longitudinally striate. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: longitudinally strigose. Punctation of T4 in female: absent along midline, otherwise moderately dense. Macrosculpture of T5 in female: punctate rugulose laterally. Punctation of T5 in female: absent along

Figures 287–292.[115] *Trichoteleia warreni* sp. n., female holotype (OSUC 181060). **287** Lateral habitus **288** Head and mesosoma, lateral view **289** Dorsal habitus **290** Head and mesosoma, dorsal view **291** Head, anterior view **292** Metasoma, dorsal view. Scale bars in millimeters.

midline, otherwise moderately dense. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: punctate rugulose. Sculpture of S2: longitudinally strigose medially, otherwise smooth with sparse fine punctation. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: slightly infuscate throughout. Color of hind wing: slightly infuscate throughout. Density of setation in fore wing: uniform throughout. Density

of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia warreni* is similar to *T. rugifrons* and *T. solocis* with which it shares striae or rugulae on lateral T4–T5 that span the length of the tergites. The frons below the median ocellus in *T. warreni* is evenly dorsoventrally strigose (Fig. 291), whereas in *T. rugifrons* and *T. solocis*, the dorsoventral rugae attenuate or are absent medially (Figs 243, 237).

Etymology. *Trichoteleia warreni* is named for Warren Steiner of the US National Museum of Natural History for collection of the holotype specimen of this species, and for the contribution of many other specimens treated in this revision.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=243938]

Material Examined. Holotype, female: **MADAGASCAR:** Fianarantsoa Auto. Prov., 7km W Ranomafana, 1100m, 22.X–31.X.1988, malaise trap, W. Steiner, OSUC 181060 (deposited in USNM). Paratype: **MADAGASCAR:** 1 female, OSUC 254607 (CASC).

***Trichoteleia xantrox* Talamas, sp. n.**
urn:lsid:zoobank.org:act:DD00884E-5D03-42A0-9E34-412EB772070B
urn:lsid.biosci.ohio-state.edu:osuc_concepts:241274
Figures 293–298; Morphbank[47]

Description. Female body length: 2.65 mm (n=1). Color of head: dark brown to black. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: absent. Sculpture of frons below median ocellus: punctate laterally, mostly smooth medially. Sculpture of posterior vertex: moderately punctate. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: punctate rugose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: posterior metapleuron brown, otherwise orange. Sculpture along posterior pronotal sulcus: rugulose. Notaulus: smooth furrow incomplete, reaching suprahumeral sulcus as row of punctures. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser anteriorly. Sculpture of mesoscutellum: smooth medially, sparsely punctate laterally. Postacetabular sulcus: comprised of small cells. Mesopleural carina: present. Sculpture along ventral half of prespecular sulcus: punctate. Sculpture of posterolateral mesepisternum: smooth except for 1 or 2 rows of fine punctures parallel to mesopleural carina. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: punctate rugose. Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex. Color of legs: brown throughout.

Color of metasoma in female: dark brown to black throughout. Posterior margin of transverse sulcus on T2: straight. Sublateral tergal carina on T2: absent. Microscu-

Figures 293–298. *Trichoteleia xantrox* sp. n., female holotype (CASENT 2043317) **293** Lateral habitus **294** Head and mesosoma, lateral view **295** Dorsal habitus **296** Head and mesosoma, dorsal view **297** Head, anterior view **298** Metasoma, dorsal view. Scale bars in millimeters.

lpture on T2: present. Microsculpture on T3: present. Microsculpture on T4: absent. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally strigose throughout. Macrosculpture of medial T3 in female: absent. Macrosculpture of lateral T3 in female: weakly longitudinally strigose. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: absent. Punctation of T4 in female: absent along midline, otherwise sparse. Macrosculpture of T5 in female: absent. Punctation of T5 in female: sparse through-

out. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: finely punctate throughout. Sculpture of S2: coarsely punctate throughout. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: hyaline throughout. Color of hind wing: hyaline throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: spectral.

Diagnosis. The most distinguishing character of *T. xantrox* is the transverse furrow on T2, which has the anterior and posterior margins parallel across the entire tergite (Fig. 298). *Trichoteleia jiro* and *T. afo* have the margins of the furrow parallel medially but converging laterally. *Trichoteleia xantrox* may also be separated from these two species by the deep furrow laterad of the orbital carina that extends to the vertex along the inner margin of the eye (Fig. 297).

Etymology. The epithet *xantrox* is a meaningless, euphonic combination of letters. It is to be treated as a noun in apposition.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=241274]

Material Examined. Holotype, female: **MADAGASCAR:** Antsiranana Auto. Prov., MA-01-01D-08, Montagne d'Ambre National Park, 12°31'13"S 49°10'45"E, 1125m, 21.IV–26.IV.2001, malaise trap, R. Harin'Hala, CASENT 2043317 (deposited in CASC). Paratypes: **MADAGASCAR:** 2 females, CASENT 2008587, 2134767 (CASC).

Trichoteleia zuparkoi Talamas & Masner, sp. n.

urn:lsid:zoobank.org:act:51C372B1-014B-48A3-A271-73B24DD0B5F2
urn:lsid.biosci.ohio-state.edu:osuc_concepts:243937
Figures 299–304; Morphbank[48]

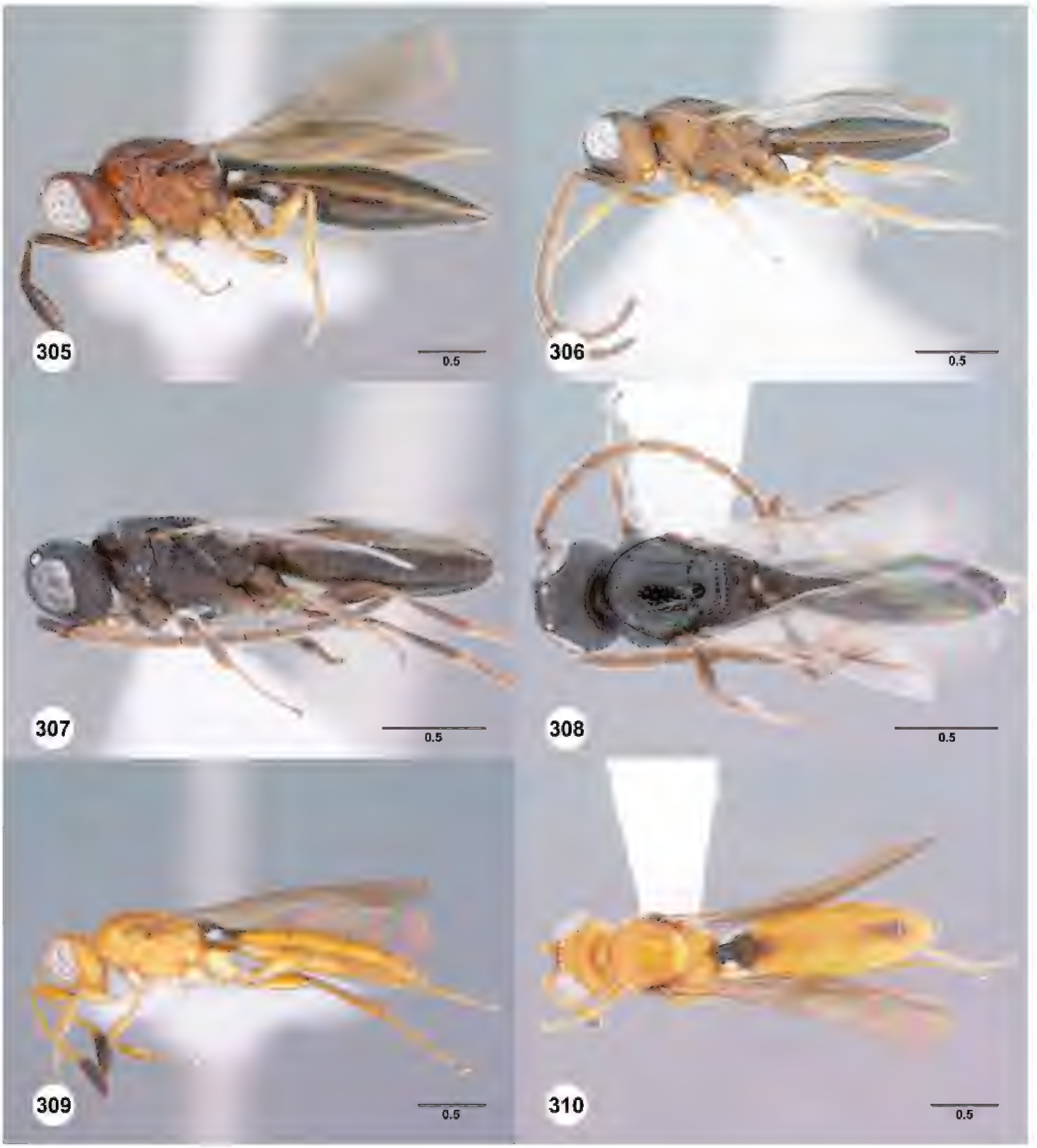
Description. Female body length: 2.55 mm (n=1). Color of head: yellow throughout. Central keel of frons: present, extending onto interantennal process. Sculpture of medial frons in female: smooth. Number of mandibular teeth: three. Basal node on mandible: present. Sculpture of frons below median ocellus: punctate rugulose throughout. Sculpture of posterior vertex: moderately punctate, rugulose posterior to eyes and posterior ocellus. Occipital rim: comprised of medium to large sized cells. Sculpture of gena: punctate rugulose. Basiconic sensillum on A7: absent.

Color of mesosoma in female: yellow throughout. Sculpture along posterior pronotal sulcus: striate, striae well defined. Notaulus: percurrent, reaching suprahumeral sulcus as a smooth furrow. Sculpture of medial mesoscutum: moderately punctate in posterior half, becoming denser and transversely rugulose anteriorly. Sculpture of mesoscutellum: smooth medially, moderately punctate laterally. Postacetabular sulcus: present as a smooth furrow. Mesopleural carina: present. Sculpture along ventral half

Figures 299–304.[117] *Trichoteleia zuparkoi* sp. n., female holotype (OSUC 181161). **299** Lateral habitus **300** Head and mesosoma, lateral view **301** Metasoma, dorsal view **302** Head and mesosoma, dorsal view **303** T4–T6, dorsal view **304** Head, anterior view. Scale bars in millimeters.

of prespecular sulcus: punctate rugose. Sculpture of posterolateral mesepisternum: smooth. Sculpture of ventral surface of mesepisternum: smooth. Setation of ventral metapleural area: absent. Setation of metapleural triangle: sparse. Sculpture of metapleural triangle: rugulose. Posterior margin of metapleuron below propodeal spiracle: straight to moderately convex. Color of legs: yellow throughout.

Color of metasoma in female: yellow. Posterior margin of transverse sulcus on T2: strongly convex. Sublateral tergal carina on T2: absent. Microsculpture on T2:



Figures 305–310.[118] 305, *Trichoteleia levii* sp. n., Lateral habitus, female (CASENT 2043789) **306** *Trichoteleia jiro* sp. n., Lateral habitus, male (OSUC 143329) **307** *Trichoteleia bicolor* sp. n., Lateral habitus, male (CASENT 2135801) **308** *Trichoteleia bicolor* sp. n., Dorsal habitus, male (CASENT 2135801) **309** *Trichoteleia hemlyae* sp. n., Lateral habitus, female (CASENT 2136418) **310** *Trichoteleia hemlyae* sp. n., Dorsal habitus, female (CASENT 2136418). Scale bars in millimeters

absent. Microsculpture on T3: absent. Microsculpture on T4: absent. Horn on T1 in female: present as a large, apically rounded protuberance. Macrosculpture of T2 in female: longitudinally striate throughout. Macrosculpture of medial T3 in female: absent. Macrosculpture of lateral T3 in female: longitudinally striate. Macrosculpture of medial T4 in female: absent. Macrosculpture of lateral T4 in female: obliquely strigose. Punctation of T4 in female: sparse throughout. Macrosculpture of T5 in female: weak-

ly rugulose laterally. Punctation of T5 in female: sparse throughout. Shape of T5 in female: width of posterior margin greater than or equal to length. Microscupture on T6 in female: absent. Sculpture of T6 in female: smooth with fine setigerous punctures along lateral margin. Sculpture of S2: longitudinally striate anteromedially, otherwise smooth. Prominent longitudinal median carina on S2: absent.

Wings: macropterous, apex or forewing extending beyond posterior margin of T3. Color of forewing in female: infuscate apical to R with white spot near apex of wing. Color of hind wing: hyaline throughout. Density of setation in fore wing: uniform throughout. Density of setation in hind wing: uniform throughout. Length of R1: more than 1.5 times as long as r. M+Cu and RS+M in forewing: nebulous.

Diagnosis. *Trichoteleia zuparkoi* shares its pattern of wing coloration with *T. cincta*, *T. delilah*, and *T. picturata*. The posterior half of the medial mesoscutum in *T. delilah* and *T. picturata* is longitudinally rugulose, and mostly smooth with moderately dense punctation in *T. zuparkoi*. In *T. cincta*, the frons below the median ocellus is dorsoventrally strigose and in *T. zuparkoi* it is punctate rugulose.

Etymology. This species is named for Dr. Robert Zuparko in gratitude for the tremendous amount of work involved to make the multitude of specimens available for this study.

Link to Distribution Map. [http://hol.osu.edu/map-large.html?id=243937]

Material Examined. Holotype, female: **MADAGASCAR:** Antsiranana Auto. Prov., #1938, Manongarivo Special Reserve, 13°59.9'S 48°25.7'E, 1175m, 20.X.1998, B. L. Fisher, OSUC 181061 (deposited in CASC). Other material: **MADAGASCAR:** 1 female, OSUC 266091 (CASC).

Acknowledgments

Thanks to A. Bennett (CNCI), M. Buffington (USNM), and R. Zuparko (CASC) for the loan of material for this study, to M. Yoder (North Carolina State University) for discussion and to L. Musetti, J. Cora, and S. Hemly (OSUC) for critical assistance with specimen handling, software, and databasing. This material is based upon work supported in part by the National Science Foundation under grant No. DEB–0614764 to N.F. Johnson and A.D. Austin, and grant No. DEB-0072713 to BL. Fisher and CE Griswold and DEB-0344731 to B.L. Fisher and P.S. Ward. Fieldwork that provided the basis for this work could not have been completed without the gracious support of the Malagasy people.

References

Bin F (1981) Definition of female antennal clava based on its plate sensilla in Hymenoptera Scelionidae Telenominae. Redia 64: 245–261.[49]

Dodd (1914) Further new genera and species of Australian Proctotrypoidea. Proceedings of the Royal Society of Queensland 26: 91–140.[50]

Dodd A (1915) Notes and corrections on Australian Prototrypoidea, with descriptions of forty-five new species. Archiv fur Naturgeschichte 80(9): 1–32.[51]

Dodd A (1920) Notes on the exotic Proctotrupoidea in the British and Oxford University Museums, with descriptions of new genera and species. Transactions of the Entomological Society of London 1919: 321–382.[52]

Dodd A(1929) A revision of four genera of Australian Scelionidae. Proceedings of the Royal Society of Queensland 40: 30–50.[53]

Galloway ID (1976) The types of Australian species of the subfamily Scelioninae (Hymenoptera: Scelionidae). Queensland Journal of Agricultural and Animal Sciences 33(1): 83–114.[54]

Johnson NF (1992) Catalog of world Proctotrupoidea excluding Platygastridae. Memoirs of the American Entomological Institute 51: 1–825.[55]

Kieffer JJ (1910) Hymenoptera. Fam. Scelionidae. Addenda et corrigenda. Genera Insectorum 80: 61–112.[56]

Kieffer JJ (1912) Hymenoptera, Proctotrupoidea. Transactions of the Linnean Society of London, Zoology 15: 45–80.[57]

Kieffer JJ (1926) Scelionidae. Das Tierreich. Vol. 48. Walter de Gruyter & Co., Berlin, 885 pp.[58]

Mason WRM (1986) Standard drawing conventions and definitions for venational and other features of wings of Hymenoptera. Proc. Entomol. Soc. Wash. 88:1–7.[59]

Masner L (1965) The types of Proctotrupoidea (Hymenoptera) in the British Museum (Natural History) and in the Hope Department of Entomology, Oxford. Bulletin of the British Museum (Natural History) Entomology Supplement 1: 1–154.[60]

Masner L (1976) Revisionary notes and keys to world genera of Scelionidae (Hymenoptera: Proctotrupoidea). Memoirs of the Entomological Society of Canada 97: 1–87.[61]

Masner L (1980) Key to genera of Scelionidae of the Holarctic region, with descriptions of new genera and species (Hymenoptera: Proctotrupoidea). Memoirs of the Entomological Society of Canada 113: 1–54.[62]

Masner L, Muesebeck CFW (1968) The types of Proctotrupoidea (Hymenoptera) in the United States National Museum. Bulletin of the United States National Museum 270: 1–143.[63]

Mikó I, Vilhelmsen L, Johnson NF, Masner L, Pénzes Z (2007) Skeletomusculature of Scelionidae (Hymenoptera: Platygastroidea): head and mesosoma. Zootaxa 1571: 1–78.[64]

Mu[e]sebeck CFW, Walkley LM (1956) Type species of the genera and subgenera of parasitic wasps comprising the superfamily Proctotrupoidea (order Hymenoptera). Proceedings of the U.S. National Museum 105: 319–419.[65]

Polaszek A, Agosti D, Alonso-Zarazaga M, Beccaloni G, de Place Bjørn P, Bouchet P, Brothers DJ, Earl of Cranbrook, Evenhuis NL, Godfray HCJ, Johnson NF, Krell FT, Lipscomb D, Lyal CHC, Mace GM, Mawatari SF, Miller SE, Minelli A, Morris S, Ng PKL, Patterson DJ, Pyle RL, Robinson N, Rogo L, Taverne J, Thompson FC, van Tol J, Wheeler QD, Wilson EO (2005) A universal register for animal names. Nature 437: 477.[66]

Risbec J (1956) Proctotrupides Scelionini de Madagascar [Hymenopteres]. Revue Française d'Entomologie 23: 244–264.[67]

Endnotes

1 http://biocol.org:urn:lsid:biocol.org:col:1011
2 http://biocol.org:urn:lsid:biocol.org:col:1012
3 http://biocol.org:urn:lsid:biocol.org:col:33864
4 http://biocol.org:urn:lsid:biocol.org:col:1014
5 http://biocol.org:urn:lsid:biocol.org:col:34411
6 http://biocol.org:urn:lsid:biocol.org:col:1019
7 http://morphbank.net/?id=578543
8 http://morphbank.net/?id=578544
9 http://morphbank.net/?id=578545
10 http://morphbank.net/?id=578546
11 http://morphbank.net/?id=578547
12 http://morphbank.net/?id=578535
13 http://morphbank.net/?id=578548
14 http://morphbank.net/?id=578550
15 http://morphbank.net/?id=578549
16 http://morphbank.net/?id=578552
17 http://morphbank.net/?id=578551
18 http://morphbank.net/?id=578536
19 http://morphbank.net/?id=578582
20 http://morphbank.net/?id=578553
21 http://morphbank.net/?id=578554
22 http://morphbank.net/?id=578555
23 http://morphbank.net/?id=578556
24 http://morphbank.net/?id=578557
25 http://morphbank.net/?id=578558
26 http://morphbank.net/?id=578559
27 http://morphbank.net/?id=578560
28 http://morphbank.net/?id=578562
29 http://morphbank.net/?id=578561
30 http://morphbank.net/?id=578564
31 http://morphbank.net/?id=578565
32 http://morphbank.net/?id=578563
33 http://morphbank.net/?id=578566
34 http://morphbank.net/?id=578537
35 http://morphbank.net/?id=578567
36 http://morphbank.net/?id=578569
37 http://morphbank.net/?id=578568
38 http://morphbank.net/?id=578570
39 http://morphbank.net/?id=578572
40 http://morphbank.net/?id=578571
41 http://morphbank.net/?id=578574

42 http://morphbank.net/?id=578576
43 http://morphbank.net/?id=578575
44 http://morphbank.net/?id=578577
45 http://morphbank.net/?id=578573
46 http://morphbank.net/?id=578623
47 http://morphbank.net/?id=578579
48 http://morphbank.net/?id=578580
49 http://lsid.tdwg.org/urn:lsid:biosci.ohio-state.edu:osuc_pubs:131
50 http://lsid.tdwg.org/urn:lsid:biosci.ohio-state.edu:osuc_pubs:410
51 http://lsid.tdwg.org/urn:lsid:biosci.ohio-state.edu:osuc_pubs:334
52 http://lsid.tdwg.org/urn:lsid:biosci.ohio-state.edu:osuc_pubs:409
53 http://lsid.tdwg.org/urn:lsid:biosci.ohio-state.edu:osuc_pubs:344
54 http://lsid.tdwg.org/urn:lsid:biosci.ohio-state.edu:osuc_pubs:353
55 http://lsid.tdwg.org/urn:lsid:biosci.ohio-state.edu:osuc_pubs:229
56 http://lsid.tdwg.org/urn:lsid:biosci.ohio-state.edu:osuc_pubs:309
57 http://lsid.tdwg.org/urn:lsid:biosci.ohio-state.edu:osuc_pubs:387
58 http://lsid.tdwg.org/urn:lsid:biosci.ohio-state.edu:osuc_pubs:310
59 http://lsid.tdwg.org/urn:lsid:biosci.ohio-state.edu:osuc_pubs:7039
60 http://lsid.tdwg.org/urn:lsid:biosci.ohio-state.edu:osuc_pubs:342
61 http://lsid.tdwg.org/urn:lsid:biosci.ohio-state.edu:osuc_pubs:311
62 http://lsid.tdwg.org/urn:lsid:biosci.ohio-state.edu:osuc_pubs:474
63 http://lsid.tdwg.org/urn:lsid:biosci.ohio-state.edu:osuc_pubs:312
64 http://www.mapress.com/zootaxa/2007f/zt01571p078.pdf
65 http://lsid.tdwg.org/urn:lsid:biosci.ohio-state.edu:osuc_pubs:240
66 http://lsid.tdwg.org/urn:lsid:biosci.ohio-state.edu:osuc_pubs:20959
67 http://lsid.tdwg.org/urn:lsid:biosci.ohio-state.edu:osuc_pubs:405
68 http://morphbank.net/?id=578585
69 http://morphbank.net/?id=578627
70 http://morphbank.net/?id=578626
71 http://morphbank.net/?id=578628
72 http://morphbank.net/?id=578629
73 http://morphbank.net/?id=578630
74 http://morphbank.net/?id=578631
75 http://morphbank.net/?id=578632
76 http://morphbank.net/?id=578633
77 http://morphbank.net/?id=578583
78 http://morphbank.net/?id=578586
79 http://morphbank.net/?id=578587
80 http://morphbank.net/?id=578588
81 http://morphbank.net/?id=578589
82 http://morphbank.net/?id=578590
83 http://morphbank.net/?id=578591
84 http://morphbank.net/?id=578592

85 http://morphbank.net/?id=578593
86 http://morphbank.net/?id=578594
87 http://morphbank.net/?id=578540
88 http://morphbank.net/?id=578596
89 http://morphbank.net/?id=578597
90 http://morphbank.net/?id=578598
91 http://morphbank.net/?id=578599
92 http://morphbank.net/?id=578600
93 http://morphbank.net/?id=578601
94 http://morphbank.net/?id=578602
95 http://morphbank.net/?id=578603
96 http://morphbank.net/?id=578604
97 http://morphbank.net/?id=578605
98 http://morphbank.net/?id=578606
99 http://morphbank.net/?id=578607
100 http://morphbank.net/?id=578608
101 http://morphbank.net/?id=578609
102 http://morphbank.net/?id=578610
103 http://morphbank.net/?id=578611
104 http://morphbank.net/?id=578612
105 http://morphbank.net/?id=578613
106 http://morphbank.net/?id=578614
107 http://morphbank.net/?id=578615
108 http://morphbank.net/?id=578616
109 http://morphbank.net/?id=578617
110 http://morphbank.net/?id=578618
111 http://morphbank.net/?id=578619
112 http://morphbank.net/?id=578620
113 http://morphbank.net/?id=578621
114 http://morphbank.net/?id=578622
115 http://morphbank.net/?id=578578
116 http://morphbank.net/?id=578624
117 http://morphbank.net/?id=578625
118 http://morphbank.net/?id=578634
119 http://morphbank.net/?id=578595
120 http://www.gbif.org/informatics/standards-and-tools/publishing-data/data-standards/darwin-core-archives/
121 http://rs.tdwg.org/dwc/terms/guides/text/index.htm
122 http://code.google.com/p/gbif-providertoolkit/

Appendix 1

Occurrence data (doi: 10.3897/zookeys.80.907.app.1a) and taxon checklist (doi: 10.3897/zookeys.80.907.app.1b) for all records used in the present paper. File format: DarwinCore Archive.

Explanation note: Darwin Core Archive[120] (DwC-A) is an international biodiversity informatics data standard and the preferred format for publishing data to the Global Biodiversity Information Facility (GBIF) network. Each Darwin Core Archive consists of at least three files: (1) one or more data files keeping all records of the particular dataset in a tabular format such as a comma-separated or tab-separated list; (2) the archive descriptor (meta.xml) file describing the individual data file columns used and mapping them to DwC terms; and (3) a metadata file describing the entire dataset which GBIF recommends to be EML (Ecological Metadata Language) 2.1.1 based. The format is defined in the Darwin Core text guidelines[121]. Darwin Core is no longer strictly bound to occurrence data, and together with Dublin Core (on which its ideas are based), it is used by GBIF and others to encode data about organism names, taxonomies and species information. The Darwin Core Archive is available as supplementary file to the present revision and can be also simultaneously published via the GBIF infrastructure through the Integrated Publishing Toolkit[122] (IPT).